

SEQUENCE LISTING

<110> I.N.S.E.R.M.
MAX-PLANCK-GESELLSCHAFT ZUR FORDERUNG DES WISSENSC

<120> Novel *Neisseria meningitidis* compounds and
anti-infection applications thereof

41

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<170> PatentIn Ver. 2.1

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<212> DNA

<213> *Neisseria meningitidis*

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<213> *Neisseria meningitidis*

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Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
  35           40           45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
  50           55           60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
  65           70           75           80
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His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
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Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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Glu Glu Gln Lys Lys Pro Gln
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<213> Neisseria meningitidis

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Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly	35	40	45
Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly	50	55	60
Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala	65	70	75
His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp	85	90	95
Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro	100	105	110
Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys	115	120	125
Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu	130	135	140
Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe	145	150	155
Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala	165	170	175
Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly	180	185	190
Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp	195	200	205
Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg	210	215	220
Glu Glu Gln Lys Lys Pro Gln	225	230	

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<213> Neisseria meningitidis

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Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
 35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Ala Gly
 50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
 165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
 180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
 195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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Glu Glu Gln Lys Lys Pro Gln
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 35 40 45
 Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60
 Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80
 His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95
 Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110
 Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125
 Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140
 Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
 165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
 180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
 195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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Glu Glu Gln Lys Lys Pro Gln
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Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
 35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp

	85		90		95
Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro	100		105		110
Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys	115		120		125
Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu	130		135		140
Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe	145		150		155
Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala	165		170		175
Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly	180		185		190
Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp	195		200		205
Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg	210		215		220
Glu Glu Gln Lys Lys Pro Gln	225		230		

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 <213> Neisseria meningitidis

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 35 40 45
 Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60
 Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80
 His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95
 Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110
 Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125
 Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140
 Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160
 Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
 165 170 175
 Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
 180 185 190
 Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
 195 200 205
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 Glu Glu Gln Lys Lys Pro Gln
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<213> Neisseria meningitidis

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      20              25              30

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Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
      35              40              45

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Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
      50              55              60

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Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
      65              70              75              80

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His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
      85              90              95

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Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
      100              105              110

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Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
      115              120              125

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Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
      130              135              140

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Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
      145              150              155              160

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Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
      165              170              175

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Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
      180              185              190

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Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
      195              200              205

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Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
      210              215              220

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Glu Glu Gln Lys Lys Pro Gln
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 35 40 45
 Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60
 Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80
 His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95
 Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110
 Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125
 Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140
 Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160
 Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala

165

170

175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
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<212> DNA

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gataaagtac gcgaagagca gaaaaagccg caataa 696

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110
 Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125
 Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140
 Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160
 Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
 165 170 175
 Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
 180 185 190
 Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
 195 200 205
 Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
 210 215 220
 Glu Glu Gln Lys Lys Pro Gln
 225 230

<210> 19
 <211> 696
 <212> DNA
 <213> Neisseria meningitidis

<400> 19
 atgaaactga aaaccttagc tttgacttca ttgaccctgt tggcattggc cgcttgtagc 60
 aaacaggctg aaaccagtgt tccggcagac agcgcccaaa gcagctcatc tgctccggca 120
 gcccttgctg agttgaacga aggtgtgaac tacactgtat tgtctacgcc tattccgcaa 180
 cagcaggccg gtaaaatcga agtattggaa tttttcggct acttctgccc gcattgcgcc 240
 catcttgagc cggctcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
 cgggagcatg tcgtgtgggg tgatgaaatg aaacctttgg cacttttggc ggccgcagtg 360
 gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggttaatcaa 420
 aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
 gacggcaaaa aagtattggc tgcatttgag gctcctgaaa gccaaagcgc tgccggctcaa 540
 atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat tgcggcgccg 600
 aaataccaag ttgaatttaa agactggcag tctgggtatga ccacgattga ccagttggtg 660
 gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 20
 <211> 231
 <212> PRT
 <213> Neisseria meningitidis

<400> 20
 Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
 1 5 10 15

Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Ala
 20 25 30
 Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
 35 40 45
 Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60
 Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80
 His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95
 Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110
 Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125
 Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140
 Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160
 Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
 165 170 175
 Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
 180 185 190
 Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
 195 200 205
 Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
 210 215 220
 Glu Glu Gln Lys Lys Pro Gln
 225 230

<210> 21
 <211> 696
 <212> DNA
 <213> Neisseria meningitidis

<400> 21
 atgaaactga aaaccttagc tttgacttca ttgaccctgt tggcattggc cgctttagc 60
 aaacaggctg aaaccagcgt tccggcagac agcgtccaaa gcagctcatc tgctccggca 120
 gccccagccc cattgaccga aggcgtgaac tacactgtat tgtccacgcc tatcccga 180
 cagcaggccg gcaaagtcga agtcttggaa ttttccggct acttctgccc gcattgcgcc 240
 catcttgagc cgggtcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
 cgggagcatg tcgtgtgggg tgatgaaatg aaaccttttg cacgtttggc ggccgcagtg 360
 gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggttaatcaa 420

aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
 gacggcaaaa aagtattggc tgcatttgag gcttctgaaa gccaaagcgcg tgcgggtcaa 540
 atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat cgtcggcggc 600
 aaataccaag ttgaatttaa agactggcag tccggtatga ccacgattga ccagttggtg 660
 gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 22

<211> 231

<212> PRT

<213> Neisseria meningitidis

<400> 22

Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
 1 5 10 15

Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Val
 20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Pro Leu Thr Glu Gly
 35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60

Lys Val Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
 100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
 115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
 130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
 145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Ser Glu Ser Gln Ala
 165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
 180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
 195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
 210 215 220

Glu Glu Gln Lys Lys Pro Gln
 225 230

<210> 23
<211> 696
<212> DNA
<213> Neisseria meningitidis

<400> 23
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aaacaggctg aaaccagcgt tccggcagac agcgtccaaa gcagctcatc tgctccggca 120
gccccagccc cattgaccga aggcgtgaac tacactgtat tgtccacgcc tatcccgcaa 180
cagcaggccg gcaaagtcga agtcttgga tttttcggct acttctgccc gcattgcgcc 240
catcttgagc cggctcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
cgggagcatg tcgtgtggg tgatgaaatg aaacctttgg cacgtttggc ggccgcagtg 360
gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcat gggttaatcaa 420
aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
gacggcaaaa aagtattggc tgcatttgag gcttctgaaa gccaagcgcg tgcggctcaa 540
atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat cgtcggcgcc 600
aaataccaag ttgaatttaa agactggcag tccggtatga ccacgattga ccagttggtg 660
gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 24
<211> 231
<212> PRT
<213> Neisseria meningitidis

<400> 24
Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
1 5 10 15
Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Val
20 25 30
Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Pro Leu Thr Glu Gly
35 40 45
Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60
Lys Val Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80
His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95
Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110
Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125
Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140
Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160
Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Ser Glu Ser Gln Ala

	165		170		175
Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly					
	180		185		190
Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp					
	195		200		205
Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg					
	210		215		220
Glu Glu Gln Lys Lys Pro Gln					
225			230		

<210> 25
 <211> 696
 <212> DNA
 <213> Neisseria meningitidis

<400> 25
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 aaacaggctg aaaccagcgt tccggcagac agcgtccaaa gcagctcatc tgctccggca 120
 gccccagccc cattgaccga aggcgtgaac tacactgtat tgtccacgcc tatcccgcaa 180
 cagcaggccg gcaaagtcga agtcttggaa tttttcggct acttctgccc gcattgcgcc 240
 catcttgagc cggctcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
 cgggagcatg tcgtgtgggg tgatgaaatg aaacctttgg cactgttggc ggccgcagtg 360
 gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggtaatacaa 420
 aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
 gacggcaaaa aagtattggc tgcatttgag gctcctgaaa gccaaagcgc tgccggctcaa 540
 atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat tgcggcggc 600
 aaataccaag ttgaatttaa agactggcag tccggtatga ccacgattga ccagttggtg 660
 gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 26
 <211> 231
 <212> PRT
 <213> Neisseria meningitidis

<400> 26
 Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
 1 5 10 15
 Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Val
 20 25 30
 Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Pro Leu Thr Glu Gly
 35 40 45
 Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
 50 55 60
 Lys Val Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65 70 75 80
 His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
 85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
225 230

<210> 27

<211> 1047

<212> DNA

<213> Neisseria meningitidis

<400> 27

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gattggggca gcctgaccga acaagaggca aggcagttta tctatttgat tgagaaagat 120
cgatattcta atcaattgct tgaccgatat caaaaaaatc caagtagttt aaataatcaa 180
gaaaaaaata ttcttgcata ttttattaac caaacctctg gaggtaacac agcttgggca 240
gcttcgatac tgaaaacgcc ccagtcaatg ggtaatctca ctattccttc caaagatatt 300
aataacacct tatcgaaagc ctatcaaaca ttgagtcggt atgattcttt tgattacaaa 360
tcagctgttg ccgcacaacc tgcactttac ttattaaacg gaccgcttgg cttcagtgtc 420
aaagcagcta ctgtggcagc aggaggatat aacattggac agggagcgaa agcaatctct 480
aatggagaat atctgcatgg tacagttcag gttgttaatg gcacattgat ggttgcagga 540
tctgtatctg cacaggctgc aatatcggcc aagcctgcac ctgttaccg ttatctgagc 600
aatgacagtg ctctgcttt aagacaagct ttaactgctg aaagccagag aatccgcatg 660
aaactgccgg aagagtatcg acaaataggg aatcttgcg tagcaaaaat tgatgttaaa 720
ggattaccgc aaaggatgga agcatttagt tctttccaaa aaggggaaca tggatttatt 780
tcgttacctg aaacaaaaat ttttaaacct atatctgttg ataaatatca taatattgcc 840
tctcctccta gaggaacatt aagaaatata gatggagaat ataaattact tgaaactata 900
gcacagcaac tcggaaataa tcgtaatgta tcaggtagaa ttgatctatt tacagaatta 960
aaggcctgtc aatcttgtag caatgttatt ttagagttaa gaaatcgcta tccaaatatt 1020
caattaaata tttttacagg aaaatag 1047

<210> 28

<211> 348

<212> PRT

<213> Neisseria meningitidis

<400> 28

Glu Tyr Ala Leu Arg Glu Lys Leu Ile Lys Lys Ala Lys Gly Lys Gly
1 5 10 15
Leu Leu Ser Leu Asp Trp Gly Ser Leu Thr Glu Gln Glu Ala Arg Gln
20 25 30
Phe Ile Tyr Leu Ile Glu Lys Asp Arg Tyr Ser Asn Gln Leu Leu Asp
35 40 45
Arg Tyr Gln Lys Asn Pro Ser Ser Leu Asn Asn Gln Glu Lys Asn Ile
50 55 60
Leu Ala Tyr Phe Ile Asn Gln Thr Ser Gly Gly Asn Thr Ala Trp Ala
65 70 75 80
Ala Ser Ile Leu Lys Thr Pro Gln Ser Met Gly Asn Leu Thr Ile Pro
85 90 95
Ser Lys Asp Ile Asn Asn Thr Leu Ser Lys Ala Tyr Gln Thr Leu Ser
100 105 110
Arg Tyr Asp Ser Phe Asp Tyr Lys Ser Ala Val Ala Ala Gln Pro Ala
115 120 125
Leu Tyr Leu Leu Asn Gly Pro Leu Gly Phe Ser Val Lys Ala Ala Thr
130 135 140
Val Ala Ala Gly Gly Tyr Asn Ile Gly Gln Gly Ala Lys Ala Ile Ser
145 150 155 160
Asn Gly Glu Tyr Leu His Gly Thr Val Gln Val Val Asn Gly Thr Leu
165 170 175
Met Val Ala Gly Ser Val Ser Ala Gln Ala Ala Ile Ser Ala Lys Pro
180 185 190
Ala Pro Val Thr Arg Tyr Leu Ser Asn Asp Ser Ala Pro Ala Leu Arg
195 200 205
Gln Ala Leu Thr Ala Glu Ser Gln Arg Ile Arg Met Lys Leu Pro Glu
210 215 220
Glu Tyr Arg Gln Ile Gly Asn Leu Ala Ile Ala Lys Ile Asp Val Lys
225 230 235 240
Gly Leu Pro Gln Arg Met Glu Ala Phe Ser Ser Phe Gln Lys Gly Glu
245 250 255
His Gly Phe Ile Ser Leu Pro Glu Thr Lys Ile Phe Lys Pro Ile Ser
260 265 270
Val Asp Lys Tyr His Asn Ile Ala Ser Pro Pro Arg Gly Thr Leu Arg
275 280 285

Asn Ile Asp Gly Glu Tyr Lys Leu Leu Glu Thr Ile Ala Gln Gln Leu
 290 295 300

Gly Asn Asn Arg Asn Val Ser Gly Arg Ile Asp Leu Phe Thr Glu Leu
 305 310 315 320

Lys Ala Cys Gln Ser Cys Ser Asn Val Ile Leu Glu Phe Arg Asn Arg
 325 330 335

Tyr Pro Asn Ile Gln Leu Asn Ile Phe Thr Gly Lys
 340 345

<210> 29
 <211> 2112
 <212> DNA
 <213> Neisseria meningitidis

<400> 29
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 gctgccgccg atacgcagga caatggtgaa cattacaccg ccactctgcc caccgtttcc 120
 gtggtcggac agtccgacac cagcgctact aaaggctaca tcaactacga cgaagccgcc 180
 gttaccgcga acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
 cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
 atcgacgccg cctacgatat gcgcggcgaa agcattttcc tgccgggctt tcaagccgac 360
 gcatctgata ttaccgcga cggcgtagcg gaaagcgggc aggtgcgccg tagcaccgcc 420
 aacatcgagc gcgtggaaat cctgaaaggt ccgtcctccg tgctttatgg gcgtaccaac 480
 ggccggcggtg tcatcaacat ggtcagcaaa tacgccaaact tcaaacaag ccgtaatatc 540
 ggtacggttt atggttcgtg ggcaaaccgc agcctgaata tggacatcaa cgaagtgcgtg 600
 aacaaaaacg tcgccatccg tctcaccggc gaagtccggc gcgccaattc gttccgcagc 660
 ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
 ttgaagtgga cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtcgc 780
 accaagtccg tgtacgaccg cttcggactg ccttaccgca tggggttcgc ccaccggaac 840
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 aacaaaacc tgcgtccaa cttaacgctc aacggcgact acaccatcg cgttttgaa 1080
 aaccacctga ccgtaggcat ggattacagc cgcgaacacc gcaaccgcgac attgggtttc 1140
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 agattgcagc ctattctgac caaaaccgc cacaagccg actcctacgg catctttgtg 1260
 caaaacatct tctccgccac gcccgatttg aaattcgctc tcggcgccgc ttacgacaaa 1320
 tacaccttta attccgaaaa caaactcacc ggcagcagcc gccaatagc cggacactcg 1380
 ttcagcccca acatcggcgc agtgtggaac atcaatcccg tccacacact ttacgcctcg 1440
 tataacaaag gcttcgcgcc ttatggcgga cgcggcggtt atttgagcat cgatacgttg 1500
 tcttcgcgcg tggtcaacgc cgaccccgag tacaccgcg aatacgaac cggcgtgaaa 1560
 agcagttggc tggacgaccg cctcagcact acgttgtctg cctaccaa tgaacgcttc 1620
 aatatccgct accgccccga tccaaaaaac aacccttata tttatgcggt tagcggcaaa 1680
 caccgttcgc gcggcggtga attgtccgcc atcgggcaaa tcatcccaa aaaactctat 1740
 ctgcgcggtt cgttgggcgt gatgcaggcg aaagtgcgtt aagacaaaga aaatcccgac 1800
 cgagtgggca tccatttgaa taacaccagc aacgttacgg gcaacctgtt tttccgttat 1860
 accccgaccg aaaacctcta cggcgaaatc ggcgtaaccg gtacaggcaa acgctacggt 1920
 tacgactcaa gaaataaaga agtgactacg cttccaggct ttgcccaggt tgatgccatg 1980
 cttggctgga accataaaaa tgtaaacgtt acctttgcgg cagccaatct gttcaatcaa 2040
 aaatattggc gttcggactc tatgccgggt aatccgcgcg gctatactgc ccgggtaaat 2100
 taccgtttct ga 2112

<210> 30

<211> 703

<212> PRT

<213> Neisseria meningitidis

<400> 30

Met	Lys	Ile	Ser	Phe	His	Leu	Ala	Leu	Leu	Pro	Thr	Leu	Ile	Ile	Ala
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Ser	Phe	Pro	Val	Ala	Ala	Ala	Asp	Thr	Gln	Asp	Asn	Gly	Glu	His	Tyr
			20					25					30		

Thr	Ala	Thr	Leu	Pro	Thr	Val	Ser	Val	Val	Gly	Gln	Ser	Asp	Thr	Ser
		35					40					45			

Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn
	50					55					60				

Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile
65					70					75					80

Gln	Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu
				85					90					95	

Gly	Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile
		100						105					110		

Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly
		115					120					125			

Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg
	130					135					140				

Val	Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn
145					150					155					160

Gly	Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln
			165						170					175	

Ser	Arg	Asn	Ile	Gly	Thr	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu
		180						185					190		

Asn	Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu
	195						200					205			

Thr	Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser
	210					215					220				

Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly
225					230					235					240

Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro
				245					250					255	

Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr
			260					265					270		

Arg	Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

275					280					285					
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala
290						295					300				
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe
305					310					315					320
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp
				325					330					335	
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Leu	Thr	Leu	Asn	Gly
			340					345					350		
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp
		355					360					365			
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Phe	Ser	Ser	Ala	Phe
	370					375					380				
Ser	Ala	Ser	Ile	Asn	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly
385				390						395					400
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr
				405				410						415	
Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe
			420					425					430		
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys
		435					440					445			
Leu	Thr	Gly	Ser	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn
	450					455					460				
Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser
465					470					475					480
Tyr	Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Gly	Tyr	Leu	Ser
				485					490					495	
Ile, Asp	Thr	Leu	Ser	Ser	Ala	Val	Phe	Asn	Ala	Asp	Pro	Glu	Tyr	Thr	
		500					505					510			
Arg	Gln	Tyr	Glu	Thr	Gly	Val	Lys	Ser	Ser	Trp	Leu	Asp	Asp	Arg	Leu
		515					520					525			
Ser	Thr	Thr	Leu	Ser	Ala	Tyr	Gln	Ile	Glu	Arg	Phe	Asn	Ile	Arg	Tyr
	530					535					540				
Arg	Pro	Asp	Pro	Lys	Asn	Asn	Pro	Tyr	Ile	Tyr	Ala	Val	Ser	Gly	Lys
545				550						555					560
His	Arg	Ser	Arg	Gly	Val	Glu	Leu	Ser	Ala	Ile	Gly	Gln	Ile	Ile	Pro
				565					570					575	
Lys	Lys	Leu	Tyr	Leu	Arg	Gly	Ser	Leu	Gly	Val	Met	Gln	Ala	Lys	Val

580	585	590
Val Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn		
595	600	605
Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu		
610	615	620
Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly		
625	630	635
Tyr Asp Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg		
645	650	655
Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe		
660	665	670
Ala Ala Ala Asn Leu Phe Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met		
675	680	685
Pro Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe		
690	695	700

<210> 31

<211> 2113

<212> DNA

<213> Neisseria meningitidis

<400> 31

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cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tctcgaagg caatgccggc 300
atcgacgccg cctacgatat gcgcggcgaa agcatttttc tgccgggctt tcaagccgac 360
gcatctgata tttaccgcga cggcgtaacg gaaagcgggc aggtgcgccg tagcacgcc 420
aacatcgagc gcgtggaaat cctgaaaggc cgtcctccg tgctttatgg gcgtaccaac 480
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gcttggctgg aaccataaaa atgttaacgt tacctttgcc gcagccaatc tgttcaatca 2040
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<210> 32

<211> 697

<212> PRT

<213> Neisseria meningitidis

<400> 32

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Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
          20                      25                      30

```

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Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
          35                      40                      45

```

```

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
          50                      55                      60

```

```

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
          65                      70                      75                      80

```

```

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
          85                      90                      95

```

```

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
          100                      105                      110

```

```

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
          115                      120                      125

```

```

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
          130                      135                      140

```

```

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
          145                      150                      155                      160

```

```

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
          165                      170                      175

```

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Ser Arg Asn Ile Gly Thr Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
          180                      185                      190

```

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Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
          195                      200                      205

```

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Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
          210                      215                      220

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Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly	225	230	235	240
Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro	245	250	255	
Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr	260	265	270	
Arg	Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln	275	280	285	
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala	290	295	300	
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe	305	310	315	320
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp	325	330	335	
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Leu	Thr	Leu	Asn	Gly	340	345	350	
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp	355	360	365	
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Phe	Ser	Ser	Ala	Phe	370	375	380	
Ser	Ala	Ser	Ile	Asn	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly	385	390	395	400
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr	405	410	415	
Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe	420	425	430	
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys	435	440	445	
Leu	Thr	Gly	Ser	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn	450	455	460	
Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser	465	470	475	480
Tyr	Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Gly	Tyr	Leu	Ser	485	490	495	
Ile	Asp	Thr	Leu	Ser	Ser	Ala	Val	Phe	Asn	Ala	Asp	Pro	Glu	Tyr	Thr	500	505	510	
Arg	Gln	Tyr	Glu	Thr	Gly	Val	Lys	Ser	Ser	Trp	Leu	Asp	Asp	Arg	Leu	515	520	525	

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
 530 535 540
 Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
 545 550 555 560
 His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
 565 570 575
 Lys Lys Thr Leu Ser Ala Arg Phe Val Gly Arg Asp Ala Gly Glu Ser
 580 585 590
 Arg Arg Gln Arg Lys Ser Arg Pro Ser Gly His Pro Phe Glu His Gln
 595 600 605
 Gln Arg Tyr Arg Gln Pro Val Phe Pro Leu Tyr Pro Asp Arg Lys Pro
 610 615 620
 Leu Arg Arg Asn Arg Arg Asn Arg Tyr Arg Gln Thr Leu Arg Leu Arg
 625 630 635 640
 Leu Lys Lys Arg Ser Asp Tyr Ala Ser Arg Leu Cys Pro Ser Cys His
 645 650 655
 Ala Trp Leu Glu Pro Lys Cys Arg Tyr Leu Cys Arg Ser Gln Ser Val
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<210> 33
 <211> 2111
 <212> DNA
 <213> *Neisseria meningitidis*

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 aacatcgagc gcgtggaaat tctgaaaggc cgtcttccg tgccttacgg ccgcaccaac 480
 ggcggtggcg tcatcaacat ggtcagcaaa tacgccaaact tcaaacaag ccgcaacata 540
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 aacaaaaacg tcgccatccg tctcaccggc gaagtgcggc gcgccaatc gttccgcagc 660
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 aaatggcgtg cccaatggca gctcgcccac cgcacggcgg cgcaggattt tgatcatttc 960

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<210> 34
 <211> 700
 <212> PRT
 <213> *Neisseria meningitidis*

<400> 34
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 Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
 35 40 45
 Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
 50 55 60
 Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
 65 70 75 80
 Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
 85 90 95
 Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
 100 105 110
 Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
 115 120 125
 Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
 130 135 140
 Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
 145 150 155 160

Gly	Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln	165	170	175
Ser	Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Arg	Ala	Asn	Arg	Ser	Leu	180	185	190
Asn	Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu	195	200	205
Thr	Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser	210	215	220
Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly	225	230	235
Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro	245	250	255
Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr	260	265	270
Arg	Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln	275	280	285
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala	290	295	300
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe	305	310	315
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp	325	330	335
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Phe	Thr	Leu	Asn	Gly	340	345	350
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp	355	360	365
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Tyr	Ser	Arg	Ala	Phe	370	375	380
Thr	Ala	Ser	Ile	Asp	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly	385	390	395
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr	405	410	415
Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe	420	425	430
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys	435	440	445
Leu	Thr	Gly	Ser	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn	450	455	460

Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser	
465					470					475					480	
Tyr	Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Gly	Tyr	Leu	Ser	
			485						490					495		
Ile	Asp	Thr	Ser	Ser	Ser	Ala	Val	Phe	Asn	Ala	Asp	Pro	Glu	Tyr	Thr	
			500					505					510			
Arg	Gln	Tyr	Glu	Thr	Gly	Val	Lys	Ser	Ser	Trp	Leu	Asp	Asn	Arg	Leu	
	515						520					525				
Asp	Thr	Thr	Leu	Ser	Ala	Tyr	Gln	Ile	Glu	Arg	Phe	Asn	Ile	Arg	Tyr	
	530					535					540					
Arg	Pro	Asp	Ala	Glu	Asn	Asn	Pro	Tyr	Thr	Trp	Ala	Val	Gly	Gly	Lys	
545					550					555					560	
His	Arg	Ser	Arg	Gly	Val	Glu	Leu	Ser	Ala	Ile	Gly	Gln	Ile	Ile	Pro	
				565					570					575		
Lys	Lys	Leu	Tyr	Leu	Arg	Gly	Ser	Leu	Gly	Val	Met	Gln	Ala	Lys	Val	
		580					585					590				
Val	Glu	Asp	Lys	Lys	Asn	Pro	Asp	Arg	Val	Gly	Ile	His	Leu	Asn	Asn	
		595					600					605				
Thr	Ser	Asn	Val	Thr	Gly	Asn	Leu	Phe	Phe	Arg	Tyr	Thr	Arg	Pro	Lys	
	610					615					620					
Thr	Ser	Thr	Ala	Lys	Ser	Ala	Pro	Val	Gln	Ala	Asn	Ala	Thr	Val	Thr	
625					630					635				640		
Thr	Gln	Glu	Ile	Lys	Lys	Leu	Arg	Phe	Gln	Ala	Leu	Pro	Glu	Leu	Met	
			645						650					655		
Pro	Cys	Leu	Ala	Gly	Thr	Ile	Lys	Met	Leu	Thr	Leu	Pro	Leu	Pro	Gln	
		660						665					670			
Pro	Ile	Cys	Ser	Ile	Lys	Asn	Ile	Gly	Val	Arg	Thr	Leu	Cys	Arg	Val	
	675					680						685				
Ile	Arg	Ala	Ala	Ile	Leu	Pro	Gly	Ile	Thr	Val	Ser					
	690					695					700					

<210> 35
 <211> 2112
 <212> DNA
 <213> Neisseria meningitidis

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 gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
 gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
 cagaaaaaca aaaattacgg tacgaacgat ttgagttcca tcctcgaagg caatgccggc 300

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<210> 36

<211> 703

<212> PRT

<213> Neisseria meningitidis

<400> 36

```

Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
  1             5             10            15

```

```

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
          20             25            30

```

```

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
    35             40            45

```

```

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
    50             55            60

```

```

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
    65             70            75            80

```

```

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
          85             90            95

```

```

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile

```

100				105				110							
Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly
		115					120						125		
Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg
	130					135					140				
Val	Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn
145					150					155					160
Gly	Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln
			165						170					175	
Ser	Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu
			180						185				190		
Asn	Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu
		195					200						205		
Thr	Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser
	210					215					220				
Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly
225					230					235					240
Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro
			245						250					255	
Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr
			260						265				270		
Arg	Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln
		275					280						285		
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala
	290					295					300				
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe
305					310					315					320
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp
			325						330					335	
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Leu	Thr	Leu	Asn	Gly
			340						345				350		
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp
		355					360						365		
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Phe	Ser	Ser	Ala	Phe
	370					375					380				
Ser	Ala	Ser	Ile	Asn	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly
385					390					395					400
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ala	Tyr

			405					410					415				
Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe		
			420						425						430		
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys		
			435						440						445		
Leu	Thr	Gly	Ser	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn		
			450						455						460		
Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser		
465																480	
Tyr	Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Gly	Tyr	Leu	Ser		
								485						490			
Ile	Asn	Thr	Ser	Ser	Ser	Ala	Val	Phe	Asn	Ala	Asp	Pro	Glu	Tyr	Thr		
			500						505						510		
Arg	Gln	Tyr	Glu	Thr	Gly	Val	Lys	Ser	Ser	Trp	Leu	Asp	Asp	Arg	Leu		
			515						520						525		
Ser	Thr	Thr	Leu	Ser	Ala	Tyr	Gln	Ile	Glu	Arg	Phe	Asn	Ile	Arg	Tyr		
			530						535						540		
Arg	Pro	Asp	Glu	Gln	Asn	Asp	Pro	Tyr	Thr	Trp	Ala	Val	Gly	Gly	Lys		
545																560	
His	Arg	Ser	Arg	Gly	Val	Glu	Leu	Ser	Ala	Ile	Gly	Gln	Ile	Ile	Pro		
								565						570			
Lys	Lys	Leu	Tyr	Leu	Arg	Gly	Ser	Leu	Gly	Val	Met	Gln	Ala	Lys	Val		
			580						585						590		
Val	Glu	Asp	Lys	Glu	Asn	Pro	Asp	Arg	Val	Gly	Ile	His	Leu	Asn	Asn		
			595						600						605		
Thr	Ser	Asn	Val	Thr	Gly	Asn	Leu	Phe	Phe	Arg	Tyr	Thr	Pro	Thr	Glu		
			610						615						620		
Asn	Leu	Tyr	Gly	Glu	Ile	Gly	Val	Thr	Gly	Thr	Gly	Lys	Arg	Tyr	Gly		
625									630						635		
Tyr	Asn	Ser	Arg	Asn	Lys	Glu	Val	Thr	Thr	Leu	Pro	Gly	Phe	Ala	Arg		
								645						650			
Val	Asp	Ala	Met	Leu	Gly	Trp	Asn	His	Lys	Asn	Val	Asn	Ile	Thr	Phe		
			660						665						670		
Ala	Ala	Ala	Asn	Leu	Leu	Asn	Gln	Lys	Tyr	Trp	Arg	Ser	Asp	Ala	Met		
			675						680						685		
Pro	Gly	Ala	Pro	Arg	Thr	Tyr	Thr	Ala	Arg	Val	Asn	Tyr	Ser	Phe			
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<210> 37
 <211> 2112
 <212> DNA
 <213> Neisseria meningitidis

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 gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
 gttacccgca acggacagct catcaaagaa acgccgcaaa ccacgcatac gctcaatata 240
 tagaaaaaca aaaattacgg tacgaacgat ttgagttcca tctcgaagg caatgccggc 300
 atcgacgctg cctacgatata gcgcggcgaa agcattttcc tgccgcggtt tcaagccgac 360
 gcatccgata tttaccgcca cggcgtgcgc gaaagcggac aagtgcgccg cagtactgcc 420
 aacatcgagc gcgtggaaat cctgaaaggc cgtcttccg tgctttacgg ccgcaccaac 480
 ggccgcccgc tcatcaacat ggtcagcaaa tacgccaaact tcaaacaagg ccgcaacata 540
 ggtgcggttt acggttcgtg ggcaaaccgc agcctgaata tggacattaa cgaagtgttg 600
 aacaaaaacg tcgccatccg tctcaccggc gaagtccggc gcgccaatc gttccgcagc 660
 ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
 ttgaagtggc cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtcgc 780
 accaagtcgc tgtacgaccg cttcggactg ccttacgcga tgggggttcgc ccaccggaac 840
 gattttgtca aagacaagct gcaagtttg cgctccgacc ttgaatacgc cttcaacgac 900
 aaatggcgtg cccaatggca gctcgcacc cgcacggcgg cgcaggattt tgatcatttc 960
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 aaccacttga ccgtaggcat ggattacagc cgcgaacacc gcaaccgcac cttagggttac 1140
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 agattgcagc ctatcctcac caaaaccgc cacaagccg actcctacgg catctttgtg 1260
 caaacatct tctccgccac gcccgatttg aaattcgctc tcggcggtcg ttacgacaaa 1320
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 tcttcgcgcc tgttcaacgc cgaccccgag tacacccgcc aatacgaaac cgggtgtgaa 1560
 agcagttggc tggacgaccg cctcagcact acgttgtctg cctaccaaata cgaacgcttc 1620
 aatatccgct accgccccga cgagcaaaat gatccctaca cttgggcagt cggcggcaaa 1680
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 ctgcgcggtt cgttgggcgt gatgcaggcg aaagtgcgtt aagacaaaga aaatcccgac 1800
 cgagtgaggc tccatttgaa taacaccagc aacgttacgc gcaacctgtt tttccgttat 1860
 accccgaccg aaaacctcta cggcgaaatc ggcgtaaccg gtacaggcaa acgctacggc 1920
 tacaactcaa gaaataaaga agtgactacg cttccaggct ttgcccgagt tgatgccatg 1980
 cttggctgga accataaaaa tgtaaacatt acctttgcgc cagccaatct gctcaatcaa 2040
 aaatattggc gttcggatgc catgcccggc gcgcgcgcga cttatacggc gcgggttaat 2100
 tacagtttct aa 2112

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 <211> 702
 <212> PRT
 <213> Neisseria meningitidis

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 Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
 20 25 30
 Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
 35 40 45

Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn		
50						55					60						
Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile		
65					70					75					80		
Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu	Gly		
				85					90					95			
Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile	Phe		
			100					105						110			
Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly	Val		
		115					120					125					
Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg	Val		
	130					135					140						
Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn	Gly		
145					150					155					160		
Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln	Ser		
				165					170					175			
Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu	Asn		
			180					185					190				
Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu	Thr		
	195						200					205					
Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser	Lys		
	210					215					220						
Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly	Leu		
225					230					235					240		
Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro	Asp		
			245					250						255			
Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr	Arg		
		260						265					270				
Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln	Val		
	275						280					285					
Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala	Gln		
	290					295					300						
Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe	Tyr		
305					310					315					320		
Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp	Gln		
				325					330					335			
Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Phe	Thr	Leu	Asn	Gly	Asp		
			340					345					350				

Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp Tyr
355 360 365
Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Ser Arg Ala Phe Thr
370 375 380
Ala Ser Ile Asp Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly Arg
385 390 395 400
Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr Gly
405 410 415
Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe Val
420 425 430
Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys Leu
435 440 445
Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn Ile
450 455 460
Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser Tyr
465 470 475 480
Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser Ile
485 490 495
Asn Thr Ser Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr Arg
500 505 510
Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser
515 520 525
Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg
530 535 540
Pro Asp Glu Gln Asn Asp Pro Tyr Thr Trp Ala Val Gly Gly Lys His
545 550 555 560
Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys
565 570 575
Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val
580 585 590
Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
595 600 605
Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
610 615 620
Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
625 630 635 640
Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
645 650 655

Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Ile Thr Phe Ala
660 665 670

Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ala Met Pro
675 680 685

Gly Ala Pro Arg Thr Tyr Thr Ala Arg Val Asn Tyr Ser Phe
690 695 700

<210> 39
<211> 2112
<212> DNA
<213> Neisseria meningitidis

<400> 39
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gtgggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttaccgcga acggacagct catcaaagaa acgccgcaaa ccatcgatc gctcaatatc 240
tagaaaaaca aaaattacgg tacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
atcgacgctg cctacgatat gcgcggcgaa agcatttttc tgcgcggttt tcaagccgac 360
gcatccgata tttaccgcga cggcgtgcgc gaaagcggac aagtgcgcgc cagtactgcc 420
aacatcgagc gcgtggaaat cctgaaaggc cgtctttccg tgctttacgg ccgcaccaac 480
ggcggcggcg tcatcaacat ggtcagcaaa tacgccaaact tcaaacaag ccgcaacatc 540
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aacaataacg tcgccatccg tctcaccggc gaagtcgggc gcgccaattc gttccgcagc 660
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accaagtcgc tgtacgaccg cttcggactg ccttaccgca tggggttcgc ccaccggaac 840
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tatgcaggca gcgaaaatgg caacttaatc aaacgtaact acgcctggca gcagaccgac 1020
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aaccacttga ccgtaggcat ggattacagc cgcgaacacc gcaaccgcgc attgggctac 1140
cgcggcagtt tcaccgtgcc catcaacccc tacgaccgcg caagctggcc ggcttcgggc 1200
agattgcagc ctattctgac ccaaaaccgc cacaagccg actcctacgg catctttgtg 1260
caaaacatct tctccgctac gcccgatttg aaattcgctc tcggcgggccg ttacgacaaa 1320
tacaccttta attccgaaaa caaactcacc ggcaacagcc gccaatagc cggacactcg 1380
ttcagcccca acatcggcgc agtgtggaac atcaaccagc tcacacact ttacgcctcg 1440
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agcagttggc tggacgaccg cctcagcacc acattgtccg cctaccaaact cgaacgcttc 1620
aatatccgct accgccccga tccaaaaaac aacccttata tttatgcggt tagcggcaaa 1680
caccgttcgc gcggcggtga attgtccgcc atcgggcaaa tcatcccaa aaaactctat 1740
ctgcgcggtt cgttgggct gatgcaggcg aaagtcgttg aagacaaaga aaatcccgac 1800
cgagtgggca tccatttgaa taataccagc aacgttacgc gcaacctgtt tttccgttat 1860
accccgaccg aaaacctcta cggcgaaatc ggcgtaacgc gtacaggcaa acgctacggt 1920
tacaactcaa gaaataaaga agtgactacg cttccaggct ttgcccaggt tgatgccatg 1980
cttggctgga accataaaaa tgtaaacgtt acctttgcgc cagccaatct gttcaatcaa 2040
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taccgtttct ga 2112

<210> 40
<211> 702
<212> PRT

<213> Neisseria meningitidis

<400> 40

Met	Lys	Ile	Ser	Phe	His	Leu	Ala	Leu	Leu	Pro	Thr	Leu	Ile	Ile	Ala	
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Ser	Phe	Pro	Val	Ala	Ala	Ala	Asp	Thr	Gln	Asp	Asn	Gly	Glu	His	Tyr	
			20					25					30			
Thr	Ala	Thr	Leu	Pro	Thr	Val	Ser	Val	Val	Gly	Gln	Ser	Asp	Thr	Ser	
			35				40					45				
Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn	
	50					55					60					
Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile	
65					70					75					80	
Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu	Gly	
				85					90					95		
Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile	Phe	
			100					105					110			
Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly	Val	
			115				120					125				
Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg	Val	
	130					135					140					
Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn	Gly	
145					150					155					160	
Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln	Ser	
				165					170					175		
Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu	Asn	
			180					185					190			
Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu	Thr	
	195						200					205				
Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser	Lys	
	210					215					220					
Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly	Leu	
225					230					235					240	
Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro	Asp	
				245					250					255		
Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr	Arg	
			260					265					270			
Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln	Val	
		275					280					285				

Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala	Gln	290	295	300	
Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe	Tyr	305	310	315	320
Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp	Gln	325	330	335	
Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Phe	Thr	Leu	Asn	Gly	Asp	340	345	350	
Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp	Tyr	355	360	365	
Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Tyr	Arg	Gly	Ser	Phe	Thr	370	375	380	
Val	Pro	Ile	Asn	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly	Arg	385	390	395	400
Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr	Gly	405	410	415	
Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe	Val	420	425	430	
Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys	Leu	435	440	445	
Thr	Gly	Asn	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn	Ile	450	455	460	
Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser	Tyr	465	470	475	480
Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Gly	Tyr	Leu	Ser	Ile	485	490	495	
Asp	Thr	Leu	Ser	Ser	Ala	Val	Phe	Asn	Ala	Asp	Pro	Glu	Tyr	Thr	Arg	500	505	510	
Gln	Tyr	Glu	Thr	Gly	Val	Lys	Ser	Ser	Trp	Leu	Asp	Asp	Arg	Leu	Ser	515	520	525	
Thr	Thr	Leu	Ser	Ala	Tyr	Gln	Ile	Glu	Arg	Phe	Asn	Ile	Arg	Tyr	Arg	530	535	540	
Pro	Asp	Pro	Lys	Asn	Asn	Pro	Tyr	Ile	Tyr	Ala	Val	Ser	Gly	Lys	His	545	550	555	560
Arg	Ser	Arg	Gly	Val	Glu	Leu	Ser	Ala	Ile	Gly	Gln	Ile	Ile	Pro	Lys	565	570	575	
Lys	Leu	Tyr	Leu	Arg	Gly	Ser	Leu	Gly	Val	Met	Gln	Ala	Lys	Val	Val	580	585	590	

Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
 595 600 605
 Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
 610 615 620
 Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
 625 630 635 640
 Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
 645 650 655
 Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe Ala
 660 665 670
 Ala Ala Asn Leu Phe Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met Pro
 675 680 685
 Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
 690 695 700

<210> 41
 <211> 2112
 <212> DNA
 <213> Neisseria meningitidis

<400> 41
 atgaaaatat catttcattt agcttttatta cccacgctga ttattgcttc cttccctggt 60
 gctgccgccg atacgcagga caatggtgaa cattacaccg ccactctgcc caccgtttcc 120
 gtggctggac agtccgacac cagcgctactc aaaggctaca tcaactacga cgaagccgcc 180
 gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatata 240
 cagaaaaaca aaaattacgg tacgaacgat ttgagttcca tctcgaagg caatgccggc 300
 atcgacgctg cctacgatata gcgcggcgaa agcattttcc tgcgcggttt tcaagccgac 360
 gcatccgata tttaccgcca cggcggtgcgc gaaagcggac aagtgcgcgc cagtactgcc 420
 aacatcgagc gcgtggaaat cctgaaaggc cgtcttccg tgctttacgg ccgcaccaac 480
 ggcgcgggcg tcatcaacat ggtcagcaaa tacgccaaact tcaaacaaag ccgcaacata 540
 ggtgcggttt acggttagtg ggcaaaccgc agcctgaata tggacattaa cgaagtgtcg 600
 aacaaaaacg tcgccatccg tctcaccggc gaagtgcggc gcgccaatc gttccgcagc 660
 ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
 ttgaagtgga cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtcgc 780
 accaagtccg tgtacgaccg cttcggactg ccttacgcga tgggggttcgc ccaccggaac 840
 gattttgtca aagacaagct gcaagtgttg cgttcgcacc ttgaatacgc cttcaacgac 900
 aaatggcgtg cccaatggca gctcgcccac cgcacggcgg cgcaggattt tgatcatttc 960
 tatgcaggca gcgaaaatgg caacttaata aaacgtaact acgcctggca gcagactgac 1020
 aacaaaaccc tgtcgtccaa tttcacgcta aacggcgact acaccatcgg ccgttttgaa 1080
 aaccacttga ccgtaggcat ggattacagc cgcgaacacc gcaaccgcac cttaggttac 1140
 aaccgcgcct tttccgcctc catcaacccc tacgaccgcg caagctggcc ggcttcgggc 1200
 agattgcagc ctattctgac ccaaaaccgc cacaagccg actcctacgg catctttgtg 1260
 caaaacatct tctccgccac gcccgatttg aaattcgtcc tcggcggccg ttacgacaaa 1320
 tacaccttta attccgaaaa caaactcacc ggcagcagcc gccaatagag cggacactcg 1380
 ttcagcccca acatcggcgc agtgtggaac atcaatcccg tccacacact ttacgcctcg 1440
 tataacaaag gcttcgcgcc ttatggcgga cgcggcggtc atttgagcat cgatacgttg 1500
 tcttcgcgcg tgttcaacgc cgaccccgag tacacccgcc aatacgaac cggcgtgaaa 1560
 agcagttggc tggacgaccg cctcagcaact acgttgtctg cctaccaaata cgaacgcttc 1620
 aatatccgct accgccccga tccaaaaaac aacccttata tttatgcggt tagcggcaaa 1680

caccgttcgc gcggcgtgga attgtccgcc atcggggcaaa tcatccctaa aaaactctat 1740
ctgcgcgggtt cgttgggcgt gatgcaggcg aaagtcgttg aagacaaaga aaatcccgac 1800
cgagtgggca tccatttgaa taacaccagc aacgttaccg gcaacctgtt tttccgttat 1860
accccgaccg aaaacctcta cggcgaaatc ggcgtaaccg gtacaggcaa acgctacggt 1920
tacgactcaa gaaataaaga agtgactacg cttccagggt ttgcccaggt tgatgccatg 1980
cttggtctgga accataaaaa tggttaacgtt acctttgccg cagccaatct gttcaatcaa 2040
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taccgtttct ga 2112

<210> 42

<211> 702

<212> PRT

<213> Neisseria meningitidis

<400> 42

Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
1 5 10 15

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65 70 75 80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
85 90 95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
100 105 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
115 120 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
130 135 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145 150 155 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
165 170 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Trp Ala Asn Arg Ser Leu Asn
180 185 190

Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu Thr
195 200 205

Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser Lys
210 215 220

Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly Leu
 225 230 235 240
 Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro Asp
 245 250 255
 Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr Arg
 260 265 270
 Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln Val
 275 280 285
 Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala Gln
 290 295 300
 Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe Tyr
 305 310 315 320
 Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp Gln
 325 330 335
 Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly Asp
 340 345 350
 Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp Tyr
 355 360 365
 Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Asn Arg Ala Phe Ser
 370 375 380
 Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly Arg
 385 390 395 400
 Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr Gly
 405 410 415
 Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe Val
 420 425 430
 Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys Leu
 435 440 445
 Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn Ile
 450 455 460
 Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser Tyr
 465 470 475 480
 Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser Ile
 485 490 495
 Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr Arg
 500 505 510
 Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser
 515 520 525

Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg
 530 535 540
 Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys His
 545 550 555 560
 Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys
 565 570 575
 Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val
 580 585 590
 Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
 595 600 605
 Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
 610 615 620
 Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
 625 630 635 640
 Asp Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
 645 650 655
 Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe Ala
 660 665 670
 Ala Ala Asn Leu Phe Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met Pro
 675 680 685
 Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
 690 695 700

<210> 43
 <211> 2109
 <212> DNA
 <213> Neisseria meningitidis

<400> 43
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 gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
 gttaccgcga acggacagct catcaaagaa acgcccga aaatcgatac gctcaatatc 240
 cagaaaaaca aaaattacgg tacgaacgat ttgagttcca tctcgaagg caatgccggc 300
 atcgacgctg cctacgatat gcgcggtgaa agcattttcc tgcgcggttt tcaagccgac 360
 gcatccgata tttaccgcga cggcgtgcgc gaaagcggac aagtgcgccg cagtactgcc 420
 aacatcgagc gcgtggaaat cctgaaaggc cgttcttcg tgccttacgg ccgcaccaac 480
 ggccgcccgc tcatcaacat ggtcagcaaa tacgccaaact tcaaacaag ccgcaacatc 540
 ggtgcccgtt acggttcgtg ggcaaaccgc agcctgaata tggacattaa cgaagtgcgt 600
 aacaaaaacg tcgccatccg tctcaccggc gaagtccggc gcgccaatc gttccgcagc 660
 ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
 ttgaagtga cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtccg 780
 accaagtccg tgtacgaccg cttcggactg ccttacgcga tgggggttcgc ccaccggaac 840
 gattttgtca aagacaagct gcaagtttgg cgttcgcgacc ttgaatacgc cttcaacgac 900
 aaatggcgtg cccaatggca gctcgcacc cgcacggcgg cgcaggattt tgatcatttc 960
 tatgcaggca gcgaaaatgg caacttaatc aaacgtaact acgcctggca gcagaccgac 1020

```

aacaaaaccc tgtcgtccaa cttaacgctc aacggcgact acaccatcgg ccgttttgaa 1080
aaccacctga ccgtaggcat ggattacagt cgcgaacacc gcaacccgac attgggctac 1140
cgcggcagtt tcaccgtgcc catcaacccc tacgaccgcg caagctggcc ggcttcgggc 1200
agattgcagc ctattctgac ccaaaaccgc cacaagccg actcctacgg catctttgtg 1260
caaacatctt tctccgttac gcccgatttg aaattcgctc tcggcgggccg ttacgacaaa 1320
tacaccttta attccgaaaa caaactcacc ggcaacagcc gccaatagag cggacactcg 1380
ttcagcccca acatcgggcg agtgtggaac atcaaccagc tccacacact ttatgcctcg 1440
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gccgccgtgt tcaacgcgcg ccccgagtag actcgccaat acgaaaccgg tgtgaaaagc 1560
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cgttcgcgcg gcgtggaatt gtccgccatc gggcaaatca tccctaaaaa actctatctg 1740
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gtgggcatcc atttgaataa caccagcaac gttaccggca acctgttttt ccgttatacc 1860
ccgactgaaa acctctacgg cgaaatcggc gtaaccggta caggcaaacg ctacggctac 1920
aactcaagaa ataaagaagt gaccacgctt ccaggctttg cccgagttga tgccatgctc 1980
ggctggaacc ataaaaatgt taacgttacc tttgccgctg ccaatctgct caatcaaaaa 2040
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cgtttctga                                     2109

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<210> 44

<211> 702

<212> PRT

<213> Neisseria meningitidis

<400> 44

```

Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
  1             5             10            15

```

```

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
      20             25            30

```

```

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
      35             40            45

```

```

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
      50             55            60

```

```

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
      65             70            75            80

```

```

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
      85             90            95

```

```

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
      100            105           110

```

```

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
      115            120            125

```

```

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
      130            135            140

```

```

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
      145            150            155            160

```

```

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln

```

165										170					175				
Ser	Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu				
			180					185					190						
Asn	Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu				
		195					200					205							
Thr	Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser				
	210					215					220								
Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly				
225					230					235					240				
Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro				
				245					250					255					
Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr				
			260					265					270						
Arg	Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln				
		275					280					285							
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala				
	290					295					300								
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe				
305					310					315					320				
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp				
				325				330						335					
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Leu	Thr	Leu	Asn	Gly				
			340					345					350						
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp				
		355					360					365							
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Tyr	Arg	Gly	Ser	Phe				
	370					375					380								
Thr	Val	Pro	Ile	Asn	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly				
385					390					395					400				
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr				
				405				410						415					
Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe				
			420					425					430						
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys				
		435					440					445							
Leu	Thr	Gly	Asn	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn				
	450					455					460								
Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser				

465		470		475		480
Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Tyr Leu Ser Ile						
	485			490		495
Asp Thr Ser Ser Ala Ala Val Phe Asn Ala Ala Pro Glu Tyr Thr Arg						
	500		505		510	
Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser						
	515		520		525	
Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg						
	530		535		540	
Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys His						
	545		550		555	560
Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys						
	565		570		575	
Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val						
	580		585		590	
Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr						
	595		600		605	
Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn						
	610		615		620	
Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr						
	625		630		635	640
Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val						
	645		650		655	
Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe Ala						
	660		665		670	
Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met Pro						
	675		680		685	
Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe						
	690		695		700	

<210> 45
 <211> 2108
 <212> DNA
 <213> Neisseria meningitidis

<400> 45
 atgaaaatat catttcattt agctttatta cccacgctga ttattgcttc cttccctgtt 60
 gctgccgccg atacgcagga caatggtgaa cattacaccg ccacgctacc tacggtttcc 120
 gtggteggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
 gttaccgcga acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
 cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
 atcgacgctg cctacgatat gcgcggtgaa agcattttcc tgcgcggttt tcaagccgac 360

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gcatccgata tttaccgcga cggcgtgcgc gaaagcggac aagtgcgccc cagtactgcc 420
aacatcgagc gcggtggaat cctgaaaggc cgtcttccg tgctttacgg ccgtaccaac 480
ggcggcgggc tcatcaacat ggtcagcaaa tacgccaaact tcaaacaaag ccgcaacatc 540
ggtgcggttt acggttcgtg ggcaaaccgc agcctgaata tggacattaa cgaagtgcgtg 600
aacaaaaacg tcgccatccg tctcaccggc gaagtgcggc gcgccaatc gttccgcagc 660
ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
ttgaagtgga cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtcgg 780
accaagtcgg tgtacgaccg cttcggactg cttaccgca tggggttcgc ccacccgaac 840
gattttgtca aagacaagct gcaagtttgg cgttccgacc tcgaatacgc cttcaacgac 900
aaatggcgcg cccaatggca gctcgccac cgcacggcag cgcaggattt cgaccatttt 960
tatgcaggca gcgaaaacgg cagccgaatc aaacgcaact acgcctggca gcagaccgac 1020
aacaaaactc tgtcgtccaa cttcacgctc aacggcgact acaccatcgg tcgttttgaa 1080
aaccacctga ccgtaggcat ggattacagc cgcgaacacc gcaaccgcac attgggctac 1140
cgcggcagtt tcaccgtgcc catcaacccc tacgaccggc caagctggcc ggcttcgggc 1200
agattgcagc ctattctgac ccaaaccgc cacaagccg actcctacgg catctttgtg 1260
caaacatctt tctccgctac gcccgatttg aaattcgtcc tcggcggccg ttacgacaaa 1320
tacaccttta attccgaaaa caaactcacc ggcaacagcc gccaatacag cggacactcg 1380
ttcagcccca acatcggcgc agtgtggaac atcaaccagc tccacacact ttacgcctcg 1440
tataacaaag gcttcgcgcc ttatggcgga cgcggatatt tgagtatcga cacttcgtct 1500
gcgcgcgtgt tcaacgcgcg ccccgagtac accccaata cgaaaccggc gtcaaaagca 1560
gttggtgga caatcgttt gacaccaccc tgtcgtttta ccaaatcgaa cgcttcaata 1620
tccgctaccg ccccgatcca aaaaacaacc cttatattta tgcggttagc ggcaaacacc 1680
gttcgcgcgg cgtggaattg tccgccatcg ggcaaatcat ccccaaaaaa ctctatctgc 1740
gcggttcggt gggcgtgatg caggcgaaag tcggtgaaga caaagaaaat cccgaccgag 1800
tgggcatcca tttgaataac accagcaacg ttaccggcaa cctgtttttc cgttataccc 1860
cgaccgaaaa cctctacggc gaaatcggcg taaccggtac gggcaaacgc tacggttaca 1920
actcaagaaa taaagaagtg actacgcttc caggctttgc ccgagttgat gccatgcttg 1980
gctggaacca taaaaatgtt aacgttacct ttgcgcgagc caatctgttc aatcaaaaat 2040
attggcgttc ggactctatg ccgggtaatc cgcgcggcta tactgcccgg gtaaattacc 2100
gtttctga                                     2108

```

<210> 46

<211> 697

<212> PRT

<213> *Neisseria meningitidis*

<400> 46

```

Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
  1                   5                   10                   15

```

```

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
                   20                   25                   30

```

```

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
  35                   40                   45

```

```

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
  50                   55                   60

```

```

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
  65                   70                   75                   80

```

```

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
                   85                   90                   95

```

```

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
  100                   105                   110

```

Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly	115	120	125	
Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg	130	135	140	
Val	Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn	145	150	155	160
Gly	Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln	165	170		175
Ser	Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu	180	185		190
Asn	Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu	195	200		205
Thr	Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser	210	215		220
Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly	225	230	235	240
Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro	245	250		255
Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr	260	265		270
Arg	Met	Gly	Phe	Ala	His	Pro	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln	275	280		285
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala	290	295	300	
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe	305	310	315	320
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Ser	Arg	Ile	Lys	Arg	Asn	Tyr	Ala	Trp	325	330		335
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Phe	Thr	Leu	Asn	Gly	340	345		350
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp	355	360		365
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Tyr	Arg	Gly	Ser	Phe	370	375		380
Thr	Val	Pro	Ile	Asn	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly	385	390	395	400
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr	405	410		415

Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe		
			420						425					430			
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys		
		435					440					445					
Leu	Thr	Gly	Asn	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn		
	450					455					460						
Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser		
465					470					475					480		
Tyr	Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Tyr	Leu	Ser	Ile		
				485					490					495			
Asp	Thr	Ser	Ser	Ala	Ala	Val	Phe	Asn	Ala	Ala	Pro	Glu	Tyr	Thr	Pro		
			500					505					510				
Asn	Thr	Lys	Pro	Ala	Ser	Lys	Ala	Val	Gly	Trp	Thr	Ile	Val	Trp	Thr		
		515					520					525					
Pro	Pro	Cys	Arg	Phe	Thr	Lys	Ser	Asn	Ala	Ser	Ile	Ser	Ala	Thr	Ala		
	530					535					540						
Pro	Ile	Gln	Lys	Thr	Thr	Leu	Ile	Phe	Met	Arg	Leu	Ala	Ala	Asn	Thr		
545					550					555					560		
Val	Arg	Ala	Ala	Trp	Asn	Cys	Pro	Pro	Ser	Gly	Lys	Ser	Ser	Pro	Lys		
				565					570					575			
Asn	Ser	Ile	Cys	Ala	Val	Arg	Trp	Ala	Cys	Arg	Arg	Lys	Ser	Leu	Lys		
			580					585					590				
Thr	Lys	Lys	Ile	Pro	Thr	Glu	Trp	Ala	Ser	Ile	Ile	Thr	Pro	Ala	Thr		
		595					600					605					
Leu	Pro	Ala	Thr	Cys	Phe	Ser	Val	Ile	Pro	Arg	Pro	Lys	Thr	Ser	Thr		
	610					615				620							
Ala	Lys	Ser	Ala	Pro	Val	Arg	Ala	Asn	Ala	Thr	Val	Thr	Thr	Gln	Glu		
625					630					635					640		
Ile	Lys	Lys	Leu	Arg	Phe	Gln	Ala	Leu	Pro	Glu	Leu	Met	Pro	Cys	Leu		
				645					650					655			
Ala	Gly	Thr	Ile	Lys	Met	Leu	Thr	Leu	Pro	Leu	Pro	Gln	Pro	Ile	Cys		
			660					665					670				
Ser	Ile	Lys	Asn	Ile	Gly	Val	Arg	Thr	Leu	Cys	Arg	Val	Ile	Arg	Ala		
		675					680					685					
Ala	Ile	Leu	Pro	Gly	Ile	Thr	Val	Ser									
	690					695											

<211> 2113
 <212> DNA
 <213> Neisseria meningitidis

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 gtggtcggac agtccgacac cagcgctact aaaggctaca tcaactacga cgaagccgcc 180
 gttacccgca acggacagct catcaaagaa acgccgcaaa ccacgatac gctcaatata 240
 cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
 atcgacgcgc cctacgatat gcgcggcgaa agcattttcc tgcgcggcct tcaagccgac 360
 gcattctgata ttaccgcga cggcgtagcg gaaagcgggc aggtgcgcgc tagcaccgcc 420
 aacatcgagc gcgtggaaat cctgaaaggc ccgtcctccg tgctttatgg gcgtaccaac 480
 ggcggcggtg tcatcaacat ggtagcaaaa tacgccaaact tcaaacaaag ccgtaatatc 540
 ggtacggttt atggttcgtg ggcaaaccgt agcctgaata tggacatcaa cgaagtgcgt 600
 aacaaaaacg tcgccatccg tctcacgggc gaagtcgggc gcgccaatc gttccgcagc 660
 ggcatagaca gcaaaaatgt catggtttcg ccacgatta ccgtcaaact cgacaacggc 720
 ttgaagtggc cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtcgc 780
 accaagtcgc tgtacgaccg cttcggactg ccttacgcga tggggttcgc ccaccggaac 840
 gattttgtca aagacaagct gcaagtttgg cgttcgcacc ttgaatacgc cttcaacgac 900
 aaatggcgtg cccaatggca gctcgccac cgcacggcgc cgcaggattt tgatcatttc 960
 tatgcaggca gcgaaaatgg caacttaatc aaacgtaact acgcctggca gcagaccgac 1020
 aacaaaaccc tgtcgtccaa cttaacgctc aacggcgact acaccatcg ccgttttgaa 1080
 aaccacctga ccgtaggcat ggattacagc cgcgaacacc gcaaccgcgc attgggtttc 1140
 agcagcgctt tttccgcctc catcaacccc tacgaccgcg caagctggcc ggcttcgggc 1200
 agattgcagc ctattctgac ccaaaaccgc cacaagccg actcctacgg catctttgtg 1260
 caaaacatct tctccgccac gcccgatttg aaattcgtcc tcggcggcgc ttacgacaaa 1320
 tacaccttta attccgaaaa caaactcacc ggcagcagcc gccaatagc cggacactcg 1380
 ttcagcccca acatcggcgc agtgtggaac atcaatccgc tccacacact ttacgcctcg 1440
 tataacaaag gcttcgcgc tttatggcga cgcggcggtt atttgagcat cgatacgttg 1500
 tcttcgcgcg tgttcaacgc cgaccccgag tacacccgcc aatacgaaac cggcgtgaaa 1560
 agcagttggc tggacgaccg cctcagcact acgttgtctg cctaccaaact cgaacgcttc 1620
 aatatccgct accgccccga tccaaaaaac aacccttata tttatgcggt tagcggcaaa 1680
 caccgttcgc gcggcggtga attgtccgcc atcgggcaaa tcatcccaa aaaaactcta 1740
 tctgcgcggt tcggtgggcg tgatgcaggc gaaagtcggt gaagacaaag aaaatcccga 1800
 ccgagtgggc atccatttga ataacaccag caacgttacc ggcaacctgt tttccggtta 1860
 taccgcgacc gaaaacctct acggcgaaat cggcgtaacc ggtacaggca aacgctacgc 1920
 ttacgactca agaaataaag aagtgactac gcttccaggc tttgcccagc ttgatgccat 1980
 gcttggtggt aaccataaaa atgttaacgt tacctttgcc gcagccaatc tgttcaatca 2040
 aaaatattgg cgttcggact ctatgcgggc taatccgcgc ggctatactg cccgggtaaa 2100
 ttaccgtttc tga 2113

<210> 48
 <211> 697
 <212> PRT
 <213> Neisseria meningitidis

<400> 48
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 Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
 20 25 30
 Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
 35 40 45

Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn		
50						55						60					
Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile		
65					70					75					80		
Gln	Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu		
				85					90					95			
Gly	Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile		
			100					105					110				
Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly		
		115					120					125					
Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg		
	130					135						140					
Val	Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn		
145					150					155					160		
Gly	Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln		
				165					170					175			
Ser	Arg	Asn	Ile	Gly	Thr	Val	Tyr	Gly	Ser	Trp	Ala	Asn	Arg	Ser	Leu		
			180					185					190				
Asn	Met	Asp	Ile	Asn	Glu	Val	Leu	Asn	Lys	Asn	Val	Ala	Ile	Arg	Leu		
		195					200					205					
Thr	Gly	Glu	Val	Gly	Arg	Ala	Asn	Ser	Phe	Arg	Ser	Gly	Ile	Asp	Ser		
	210					215						220					
Lys	Asn	Val	Met	Val	Ser	Pro	Ser	Ile	Thr	Val	Lys	Leu	Asp	Asn	Gly		
225					230					235					240		
Leu	Lys	Trp	Thr	Gly	Gln	Tyr	Thr	Tyr	Asp	Asn	Val	Glu	Arg	Thr	Pro		
				245					250					255			
Asp	Arg	Ser	Pro	Thr	Lys	Ser	Val	Tyr	Asp	Arg	Phe	Gly	Leu	Pro	Tyr		
			260					265					270				
Arg	Met	Gly	Phe	Ala	His	Arg	Asn	Asp	Phe	Val	Lys	Asp	Lys	Leu	Gln		
		275					280					285					
Val	Trp	Arg	Ser	Asp	Leu	Glu	Tyr	Ala	Phe	Asn	Asp	Lys	Trp	Arg	Ala		
	290					295					300						
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe		
305					310					315					320		
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp		
				325					330					335			
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Leu	Thr	Leu	Asn	Gly		
			340					345					350				

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
 355 360 365
 Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
 370 375 380
 Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
 385 390 395 400
 Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
 405 410 415
 Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
 420 425 430
 Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
 435 440 445
 Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
 450 455 460
 Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
 465 470 475 480
 Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
 485 490 495
 Ile Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
 500 505 510
 Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
 515 520 525
 Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
 530 535 540
 Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
 545 550 555 560
 His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
 565 570 575
 Lys Lys Thr Leu Ser Ala Arg Phe Val Gly Arg Asp Ala Gly Glu Ser
 580 585 590
 Arg Arg Gln Arg Lys Ser Arg Pro Ser Gly His Pro Phe Glu His Gln
 595 600 605
 Gln Arg Tyr Arg Gln Pro Val Phe Pro Leu Tyr Pro Asp Arg Lys Pro
 610 615 620
 Leu Arg Arg Asn Arg Arg Asn Arg Tyr Arg Gln Thr Leu Arg Leu Arg
 625 630 635 640
 Leu Lys Lys Arg Ser Asp Tyr Ala Ser Arg Leu Cys Pro Ser Cys His
 645 650 655

Ala Trp Leu Glu Pro Lys Cys Arg Tyr Leu Cys Arg Ser Gln Ser Val
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Gln Ser Lys Ile Leu Ala Phe Gly Leu Tyr Ala Gly Ser Ala Arg Leu
675 680 685

Tyr Cys Pro Gly Lys Leu Pro Phe Leu
690 695

<210> 49
<211> 2112
<212> DNA
<213> Neisseria meningitidis

<400> 49
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gtggctcgac agtccgacac cagcgctactc aaagggtaca tcaactacga cgaagccgcc 180
gttaccgcga acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
cagaaaaaca aaaattacgg tacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
atcgacgctg cctacgatat gcgcggcgaa agcattttcc tgccgggttt tcaagccgac 360
gcatccgata tttaccgcga cggcgtgcgc gaaagcggac aagtgcgccg cagtactgcc 420
aacatcgagc gcgtggaaat cctgaaaggc ccgtcttccg tgctttacgg ccgcaccaac 480
ggcggcggcg tcatcaacat ggtcagcaaa tacgccaaact tcaaacaag cgcgaacatc 540
ggtgcggttt acggttcgtg ggcaaaccgc agcctgaata tggacattaa cgaagtgttg 600
aacaanaacg tcgccatccg tctcaccggc gaagtcgggc gcgccaatc gttccgcagc 660
ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
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accaagtcg tgtacgaccg cttcggactg ccttaccgca tggggttcgc ccaccggaac 840
gattttgtca aagacaagct gcaagtttg cgctccgacc ttgaatacgc cttcaacgac 900
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agattgcagc ctatcctcac ccaaaaccgc cacaagccg actcctacgg catctttgtg 1260
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ttcagcccca acatcggcgc agtgtggaac atcaatcccg tccacacact ttacgcctcg 1440
tataataaag gcttcgcgcc ttatggcgga cgcggcggct atttgagcat caacacgtcg 1500
tcttcgcgcc tgttcaacgc cgaccccgag tacacccgcc aatacgaaac cgggtgtgaa 1560
agcagttggc tggacgaccg cctcagcact acgttgtctg cctaccaaact cgaacgcttc 1620
aatatccgct accgccccga cgagcaaaat gatccctaca cttgggcagt cggcggcaca 1680
caccgttcgc gcggcgtgga attgtccgcc atcgggcaaa tcatcccaa aaaactctat 1740
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cgagtgggca tccatttgaa taacaccagc aacgttacgc gcaacctgtt tttccgttat 1860
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cttggctgga accataaaaa tgtaacatt acctttgccg cagccaatct gctcaatcaa 2040
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tacagtttct aa 2112

<210> 50
<211> 703
<212> PRT
<213> Neisseria meningitidis

<400> 50

Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65 70 75 80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
85 90 95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
100 105 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
115 120 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
130 135 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145 150 155 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
165 170 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
180 185 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
195 200 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
210 215 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225 230 235 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
245 250 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
260 265 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
275 280 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala

290					295					300					
Gln	Trp	Gln	Leu	Ala	His	Arg	Thr	Ala	Ala	Gln	Asp	Phe	Asp	His	Phe
305					310					315					320
Tyr	Ala	Gly	Ser	Glu	Asn	Gly	Asn	Leu	Ile	Lys	Arg	Asn	Tyr	Ala	Trp
				325					330					335	
Gln	Gln	Thr	Asp	Asn	Lys	Thr	Leu	Ser	Ser	Asn	Phe	Thr	Leu	Asn	Gly
			340					345					350		
Asp	Tyr	Thr	Ile	Gly	Arg	Phe	Glu	Asn	His	Leu	Thr	Val	Gly	Met	Asp
		355					360					365			
Tyr	Ser	Arg	Glu	His	Arg	Asn	Pro	Thr	Leu	Gly	Tyr	Ser	Arg	Ala	Phe
	370					375					380				
Thr	Ala	Ser	Ile	Asp	Pro	Tyr	Asp	Arg	Ala	Ser	Trp	Pro	Ala	Ser	Gly
385					390					395					400
Arg	Leu	Gln	Pro	Ile	Leu	Thr	Gln	Asn	Arg	His	Lys	Ala	Asp	Ser	Tyr
				405					410					415	
Gly	Ile	Phe	Val	Gln	Asn	Ile	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Lys	Phe
			420					425					430		
Val	Leu	Gly	Gly	Arg	Tyr	Asp	Lys	Tyr	Thr	Phe	Asn	Ser	Glu	Asn	Lys
		435					440					445			
Leu	Thr	Gly	Ser	Ser	Arg	Gln	Tyr	Ser	Gly	His	Ser	Phe	Ser	Pro	Asn
	450					455					460				
Ile	Gly	Ala	Val	Trp	Asn	Ile	Asn	Pro	Val	His	Thr	Leu	Tyr	Ala	Ser
465					470					475					480
Tyr	Asn	Lys	Gly	Phe	Ala	Pro	Tyr	Gly	Gly	Arg	Gly	Gly	Tyr	Leu	Ser
				485					490					495	
Ile	Asn	Thr	Ser	Ser	Ser	Ala	Val	Phe	Asn	Ala	Asp	Pro	Glu	Tyr	Thr
			500					505					510		
Arg	Gln	Tyr	Glu	Thr	Gly	Val	Lys	Ser	Ser	Trp	Leu	Asp	Asp	Arg	Leu
		515					520					525			
Ser	Thr	Thr	Leu	Ser	Ala	Tyr	Gln	Ile	Glu	Arg	Phe	Asn	Ile	Arg	Tyr
	530					535					540				
Arg	Pro	Asp	Glu	Gln	Asn	Asp	Pro	Tyr	Thr	Trp	Ala	Val	Gly	Gly	Lys
545					550					555					560
His	Arg	Ser	Arg	Gly	Val	Glu	Leu	Ser	Ala	Ile	Gly	Gln	Ile	Ile	Pro
				565					570					575	
Lys	Lys	Leu	Tyr	Leu	Arg	Gly	Ser	Leu	Gly	Val	Met	Gln	Ala	Lys	Val
			580					585					590		
Val	Glu	Asp	Lys	Glu	Asn	Pro	Asp	Arg	Val	Gly	Ile	His	Leu	Asn	Asn

595	600	605
Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu		
610	615	620
Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly		
625	630	635
Tyr Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg		
	645	650
		655
Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Ile Thr Phe		
	660	670
Ala Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ala Met		
	675	685
Pro Gly Ala Pro Arg Thr Tyr Thr Ala Arg Val Asn Tyr Ser Phe		
690	695	700

<210> 51
 <211> 2112
 <212> DNA
 <213> Neisseria meningitidis

<400> 51

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gtggctcgac	agtccgacac	cagcgctactc	aaaggctaca	tcaactacga	cgaagccgcc	180
gttaccgcga	acggacagct	catcaaagaa	acgccgcaaa	ccatcgatac	gctcaatata	240
cagaaaaaca	aaaattacgg	tacgaacgat	ttgagttcca	tcctcgaagg	caatgccggc	300
atcgacgctg	cctacgatata	gcgcggtgaa	agcattttcc	tgccgcggtt	tcaagccgac	360
gcatccgata	tttaccgcga	cggcgtgcgc	gaaagcggac	aagtgcgccg	cagtactgcc	420
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ggcggcgccg	tcatcaacat	ggtcagcaaa	tacgccaaact	tcaaacaag	ccgcaacatc	540
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ttcagcccca	acatcggcgc	agtgtggaac	atcaatcccg	tcacacact	ttacgcctcg	1440
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cgagtgggca tccatttgaa taataccagc aacgttaccg gcaacctgtt tttccgttat 1860
 accccgaccg aaaacctcta cggcgaaatc ggcgtaaccg gtacaggcaa acgctacggc 1920
 tacaactcaa gaaataaaga agtgactacg cttccaggct ttgcccagagt tgatgccatg 1980
 cttggctgga accataaaaa tggttaacgtt acctttgccg cagccaatct gctcaatcaa 2040
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 taccgtttct ga 2112

<210> 52

<211> 703

<212> PRT

<213> Neisseria meningitidis

<400> 52

Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
 1 5 10 15

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
 20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
 35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
 50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
 65 70 75 80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
 85 90 95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
 100 105 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
 115 120 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
 130 135 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
 145 150 155 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
 165 170 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
 180 185 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
 195 200 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
 210 215 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
 225 230 235 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
 245 250 255
 Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
 260 265 270
 Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
 275 280 285
 Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
 290 295 300
 Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
 305 310 315 320
 Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
 325 330 335
 Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly
 340 345 350
 Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
 355 360 365
 Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
 370 375 380
 Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
 385 390 395 400
 Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
 405 410 415
 Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
 420 425 430
 Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
 435 440 445
 Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
 450 455 460
 Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
 465 470 475 480
 Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
 485 490 495
 Ile Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
 500 505 510
 Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
 515 520 525
 Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
 530 535 540

Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
 545 550 555 560
 His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
 565 570 575
 Lys Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val
 580 585 590
 Val Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn
 595 600 605
 Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu
 610 615 620
 Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly
 625 630 635 640
 Tyr Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg
 645 650 655
 Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe
 660 665 670
 Ala Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met
 675 680 685
 Pro Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
 690 695 700

<210> 53
 <211> 693
 <212> DNA
 <213> Neisseria meningitidis

<400> 53
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 agtgccaaga aaaatctgat tctgcgcccc gtcaatatgc agacggtcag catcaacgctc 120
 ccaccctttt ttcaagacca cgcgttagca aactggctgg cggcaaacga aacgattttg 180
 cggaacacgc ttgctaaaat gcccgatcat cctgtttccc acccaaactt acccgagtgg 240
 atttggtatc ggggaataaa gaccaagctg gataccaca gccaaagcca tatccgtatc 300
 acgtcgctcg aaatcctgct tccccgaaaa gaaaccgccc cacaatcga ccacctgcgc 360
 cgctgttgga acgaacgcgc ccgcgaatac ctgctgcccc gccttgaaaa acacgcagcc 420
 gaaacaggac tgactccgcg tgccacagac ctgagcaacg ccaaacctt ttggggcgta 480
 tgccgcccgc acaccggcat ccgcctcaac tggcggtgga tcggcacgcc cgaatacgtc 540
 gccgactatg tctgcatcca cgaactctgc cacctccgcc accccgacca cagtcgcgcg 600
 ttttggcatt tgggtgaacac gctgacgccg cataccgaca atgctaaaag ttggctgaag 660
 gcgcacgggc gggaattgtt tgtgctgggg taa 693

<210> 54
 <211> 230
 <212> PRT
 <213> Neisseria meningitidis

<400> 54

Met Lys Arg Phe Thr Tyr Thr Leu Ser Asp Gly Leu Cys Ile Glu Ile
 1 5 10 15
 Glu Leu Lys Arg Ser Ala Lys Lys Asn Leu Ile Leu Arg Pro Val Asn
 20 25 30
 Met Gln Thr Val Ser Ile Asn Val Pro Pro Phe Phe Gln Asp His Ala
 35 40 45
 Leu Ala Asn Trp Leu Ala Ala Asn Glu Thr Ile Leu Arg Asn Thr Leu
 50 55 60
 Ala Lys Met Pro Val His Pro Val Ser His Pro Asn Leu Pro Glu Trp
 65 70 75 80
 Ile Trp Tyr Arg Gly Ile Lys Thr Lys Leu Asp Thr His Ser Gln Ser
 85 90 95
 His Ile Arg Ile Thr Ser Ser Glu Ile Leu Leu Pro Arg Lys Glu Thr
 100 105 110
 Ala Ala Gln Ile Asp His Leu Arg Arg Leu Leu Asn Glu Arg Ala Arg
 115 120 125
 Glu Tyr Leu Leu Pro Arg Leu Glu Lys His Ala Ala Glu Thr Gly Leu
 130 135 140
 Thr Pro Ala Ala Thr Asp Leu Ser Asn Ala Lys Thr Phe Trp Gly Val
 145 150 155 160
 Cys Arg Pro His Thr Gly Ile Arg Leu Asn Trp Arg Leu Ile Gly Thr
 165 170 175
 Pro Glu Tyr Val Ala Asp Tyr Val Cys Ile His Glu Leu Cys His Leu
 180 185 190
 Arg His Pro Asp His Ser Pro Arg Phe Trp His Leu Val Asn Thr Leu
 195 200 205
 Thr Pro His Thr Asp Asn Ala Lys Ser Trp Leu Lys Ala His Gly Arg
 210 215 220
 Glu Leu Phe Val Leu Gly
 225 230

<210> 55

<211> 546

<212> DNA

<213> Neisseria meningitidis

<400> 55

atgagcaaga ttattgtgct gaccgcaggg cacagcaaca ccgacccggg tgcggtcaac 60
 ggaagcgacc gtgaggcgga cttggcgag gatatgcgca acattgtggc ttcaatcctg 120
 cgtaacgatt acggcctgac cgtaaacc gacggcacgg gcaaaggcaa tatgccgctg 180
 cgcaagcgg tcaagctgat tcgcggctcg gatgtggcga ttgagtttca caccaacgct 240
 gccgtcagca aagcggcgac aggcacgaa gccttgagta ccgttaaaaa caaacgctgg 300

tgtcaggtgt tgagcaaagc cgttgccaag aaaaccggct ggaaactgcg cggcgaagac 360
 ggctttaaac cgcacaatgc gggccagcat tcgcgcctgg cttatgcaca agccggcggc 420
 attgtgtttg agcctttttt catcagcaac gacactgatt tggccttggt taagacgact 480
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 gtatga 546

<210> 56
 <211> 181
 <212> PRT
 <213> Neisseria meningitidis

<400> 56
 Met Ser Lys Ile Ile Val Leu Thr Ala Gly His Ser Asn Thr Asp Pro
 1 5 10 15
 Gly Ala Val Asn Gly Ser Asp Arg Glu Ala Asp Leu Ala Gln Asp Met
 20 25 30
 Arg Asn Ile Val Ala Ser Ile Leu Arg Asn Asp Tyr Gly Leu Thr Val
 35 40 45
 Lys Thr Asp Gly Thr Gly Lys Gly Asn Met Pro Leu Arg Glu Ala Val
 50 55 60
 Lys Leu Ile Arg Gly Ser Asp Val Ala Ile Glu Phe His Thr Asn Ala
 65 70 75 80
 Ala Val Ser Lys Ala Ala Thr Gly Ile Glu Ala Leu Ser Thr Val Lys
 85 90 95
 Asn Lys Arg Trp Cys Gln Val Leu Ser Lys Ala Val Ala Lys Lys Thr
 100 105 110
 Gly Trp Lys Leu Arg Gly Glu Asp Gly Phe Lys Pro Asp Asn Ala Gly
 115 120 125
 Gln His Ser Arg Leu Ala Tyr Ala Gln Ala Gly Gly Ile Val Phe Glu
 130 135 140
 Pro Phe Phe Ile Ser Asn Asp Thr Asp Leu Ala Leu Phe Lys Thr Thr
 145 150 155 160
 Lys Trp Gly Ile Cys Arg Ala Ile Ala Asp Ala Ile Ala Met Glu Leu
 165 170 175
 Gly Ala Ala Arg Val
 180

<210> 57
 <211> 237
 <212> DNA
 <213> Neisseria meningitidis

<400> 57
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gcggagattt gggcgggtgta tttgggcatt gtcggcggct atgcgggtggc gcgttcggtg 180
 gtcagcgtca aacgtcagga ggtcgagaat gaatctcgtg aaactgctgg cgaataa 237

<210> 58

<211> 78

<212> PRT

<213> Neisseria meningitidis

<400> 58

Met Arg Ile Leu Asp Ile Phe Lys Asn Pro Ala Thr Gly Asn Val Ser
 1 5 10 15

His Ser Lys Leu Trp Ala Asn Val Ala Cys Ala Ala Gly Thr Val Lys
 20 25 30

Phe Val Met Leu Pro Asp Pro Ser Ala Glu Ile Trp Ala Val Tyr Leu
 35 40 45

Gly Ile Val Gly Gly Tyr Ala Val Ala Arg Ser Leu Val Ser Val Lys
 50 55 60

Arg Gln Glu Val Glu Asn Glu Ser Arg Glu Thr Ala Gly Glu
 65 70 75

<210> 59

<211> 468

<212> DNA

<213> Neisseria meningitidis

<400> 59

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 aaactgctgg cgaataactg gcaaccgatt gccatcatcg cgcttgctcg caccgggttg 120
 gcggtgtcgc accatcaagg ctacaagtcg gcttttgcca agcagcaggc ggtcattgag 180
 aaaatgaagc gcgacaaggc gcaagccctg ctggtgtcgg ctcaaaacta cgcccgcgaa 240
 ctggaacagg cgcggtcgga agctaaaaaa tatgaagtca aggcgcacgc cgtcggcatg 300
 gctttggcga aaaaacaggc ggaagtcagc cgtctgaaaa cggaaaataa aaaggaaatc 360
 gaaaatgtcc ttactcaaga ccgtaaaaat gcaggcggcg gttgtattga cggctttggc 420
 catcacggct tgcagctcta caagcgcgcc ctcggctacg gaaattaa 468

<210> 60

<211> 155

<212> PRT

<213> Neisseria meningitidis

<400> 60

Met Arg Trp Arg Val Arg Trp Ser Ala Ser Asn Val Arg Arg Ser Arg
 1 5 10 15

Met Asn Leu Val Lys Leu Leu Ala Asn Asn Trp Gln Pro Ile Ala Ile
 20 25 30

Ile Ala Leu Val Gly Thr Gly Leu Ala Val Ser His His Gln Gly Tyr
 35 40 45

Lys Ser Ala Phe Ala Lys Gln Gln Ala Val Ile Glu Lys Met Lys Arg
 50 55 60

Asp Lys Ala Gln Ala Leu Leu Leu Ser Ala Gln Asn Tyr Ala Arg Glu
 65 70 75 80
 Leu Glu Gln Ala Arg Ala Glu Ala Lys Lys Tyr Glu Val Lys Ala His
 85 90 95
 Ala Val Gly Met Ala Leu Ala Lys Lys Gln Ala Glu Val Ser Arg Leu
 100 105 110
 Lys Thr Glu Asn Lys Lys Glu Ile Glu Asn Val Leu Thr Gln Asp Arg
 115 120 125
 Lys Asn Ala Gly Gly Gly Cys Ile Asp Gly Phe Gly His His Gly Leu
 130 135 140
 Gln Leu Tyr Lys Arg Ala Leu Gly Tyr Gly Asn
 145 150 155

<210> 61
 <211> 306
 <212> DNA
 <213> Neisseria meningitidis

<400> 61
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 acggcttgca gctctacaag cgcgccctcg gctacggaaa ttaagggttg cgaaaaggcg 120
 gtcattgccga caccgcctgc cgcggtgatg gtcgcgcccgg tgcgcccga tccgccgaaa 180
 gacggcaaga cggccacgct gttggaacac gccgccgagt ttggcggcta tggtgccgaa 240
 cttgaaaacc aaaatcaggc ttggcgcgac tgggcgggca atcactcccg caaagtcgga 300
 aactga 306

<210> 62
 <211> 101
 <212> PRT
 <213> Neisseria meningitidis

<400> 62
 Met Ser Leu Leu Lys Thr Val Lys Met Gln Ala Ala Val Val Leu Thr
 1 5 10 15
 Ala Leu Ala Ile Thr Ala Cys Ser Ser Thr Ser Ala Pro Ser Ala Thr
 20 25 30
 Glu Ile Lys Val Val Glu Lys Ala Val Met Pro Thr Pro Pro Ala Ala
 35 40 45
 Leu Met Val Ala Pro Val Arg Pro Asn Pro Pro Lys Asp Gly Lys Thr
 50 55 60
 Ala Thr Leu Leu Glu His Ala Ala Glu Phe Gly Gly Tyr Val Ala Glu
 65 70 75 80
 Leu Glu Asn Gln Asn Gln Ala Trp Arg Asp Trp Ala Gly Asn His Ser
 85 90 95

Arg Lys Val Gly Asn
100

<210> 63
<211> 348
<212> DNA
<213> *Neisseria meningitidis*

<400> 63
gtgctggcag ttttgcttgc tgggtgtagcc ttcgccctga gcgatgattt catgggttggc 60
tgctttcaaa cgccaacggt attcgctttt tgcgtcttta tagatttcaa aatacataag 120
gtttctccta tgaatgagta cacgtttttt taccgcttta acggcaagtc ctggtcattg 180
agcatttggg cggacaaccc tgaagaagcc agggcgaaat ttctgggctgc acgagaaaaat 240
gcgcactatg acggcgaggt tgtagcaaag gtttatacat ttgtaaatat ttctgtgggtt 300
aagaaattgt acaagcggac aaaatattta atgggtatca aagaatga 348

<210> 64
<211> 115
<212> PRT
<213> *Neisseria meningitidis*

<400> 64
Val Leu Ala Val Leu Leu Ala Gly Val Ala Phe Ala Leu Ser Asp Asp
1 5 10 15
Phe Met Val Gly Cys Phe Gln Thr Pro Thr Val Phe Ala Phe Cys Val
20 25 30
Phe Ile Asp Phe Lys Ile His Lys Val Ser Pro Met Asn Glu Tyr Thr
35 40 45
Phe Ser Tyr Arg Phe Asn Gly Lys Ser Trp Ser Leu Ser Ile Trp Ala
50 55 60
Asp Asn Pro Glu Glu Ala Arg Ala Lys Phe Arg Ala Ala Arg Glu Asn
65 70 75 80
Ala His Tyr Asp Gly Glu Val Val Ala Lys Val Tyr Thr Phe Val Asn
85 90 95
Ile Ser Trp Val Lys Lys Leu Tyr Lys Arg Thr Lys Tyr Leu Met Gly
100 105 110
Ile Lys Glu
115

<210> 65
<211> 1404
<212> DNA
<213> *Neisseria meningitidis*

<400> 65
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acgccctatt tgcaacatga actatttttcg gctatgaaat cctatttttc caaatatatc 120

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ctacccgttt cactttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggtcg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tgcatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgccagc caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accggcctgg acagcaaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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cagaacagcc gctatcccac cgtttctgcc catgtcggt atcagaataa cctctacact 960
tcatctgcgc agaataatga ctaccactat cggggcaaag ggatgagcgt cggcgtagag 1020
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caatacgggg ctgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
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caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

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<210> 66

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 66

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1                      5                      10                      15

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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
      20                      25                      30

```

```

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
      35                      40                      45

```

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Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
      50                      55                      60

```

```

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
      65                      70                      75                      80

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Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
      85                      90                      95

```

```

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
      100                      105                      110

```

```

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
      115                      120                      125

```

```

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
      130                      135                      140

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Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu

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145		150		155		160
Leu Leu Lys Val	Ala Glu Ser Tyr Phe Asn Val	Leu Leu Ser Arg Asp				
	165		170			175
Thr Val Ala Ala	His Ala Ala Glu Lys Glu Ala Tyr Ala	Gln Gln Val				
	180		185			190
Arg Gln Ala Gln	Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala	Leu Asp				
	195		200			205
Ile His Glu Ala	Lys Ala Gly Tyr Asp Asn Ala Leu Ala	Gln Glu Ile				
	210		215			220
Ala Val Leu Ala	Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr					
	225		230			235
Thr Gly Leu Asp	Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu					
	245		250			255
Leu Ala Arg Tyr	Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp					
	260		265			270
Gln Arg Ile Ala	Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu					
	275		280			285
Ala Leu Gln Ser	Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg					
	290		295			300
Tyr Pro Thr Val	Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr					
	305		310			315
Ser Ser Ala Gln	Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser					
	325		330			335
Val Gly Val Gln	Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser					
	340		345			350
Gly Lys Ile His	Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln					
	355		360			365
Leu Thr Ala Thr	Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr					
	370		375			380
Thr Glu Ser Gly	Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val					
	385		390			395
Leu Glu Ser Ser	Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln					
	405		410			415
Tyr Gly Ile Arg	Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val					
	420		425			430
Ala Gln Ala Glu	Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu					
	435		440			445
Ala Tyr Leu Arg	Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val					

450

455

460

Phe Ala Glu

465

<210> 67

<211> 1404

<212> DNA

<213> Neisseria meningitidis

<400> 67

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ctaccCGttt cactTTTTtac cttgccaacta tccctttccc catccgTTTtc ggctTTTTacg 180
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gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
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<210> 68

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 68

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1              5              10              15

```

```

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
      20              25              30

```

```

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
      35              40              45

```

```

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
      50              55              60

```

```

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
      65              70              75              80

```

Gln	Arg	Asp	Ala	Val	Arg	Ala	Arg	Gln	Gln	Gln	Ala	Lys	Ala	Ala	Phe	
				85					90					95		
Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser	
				100					105					110		
Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln	
				115					120					125		
Thr	Leu	Phe	Asp	Ala	Ala	Lys	Phe	Ala	Gln	Tyr	Arg	Gln	Ser	Arg	Phe	
				130					135					140		
Asp	Thr	Gln	Ala	Ala	Glu	Gln	Arg	Phe	Asp	Ala	Ala	Arg	Glu	Glu	Leu	
				145					150					155		
Leu	Leu	Lys	Val	Ala	Glu	Ser	Tyr	Phe	Asn	Val	Leu	Leu	Ser	Arg	Asp	
				165					170					175		
Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val	
				180					185					190		
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp	
				195					200					205		
Ile	His	Glu	Ala	Lys	Ala	Gly	Tyr	Asp	Asn	Ala	Leu	Ala	Gln	Glu	Ile	
				210					215					220		
Ala	Val	Leu	Ala	Glu	Lys	Gln	Thr	Tyr	Glu	Asn	Gln	Leu	Asn	Asp	Tyr	
				225					230					235		
Thr	Gly	Leu	Asp	Ser	Lys	Gln	Ile	Glu	Ala	Ile	Asp	Thr	Ala	Asn	Leu	
				245					250					255		
Leu	Ala	Arg	Tyr	Leu	Pro	Lys	Leu	Glu	Arg	Tyr	Ser	Leu	Asp	Glu	Trp	
				260					265					270		
Gln	Arg	Ile	Ala	Leu	Ser	Asn	Asn	His	Glu	Tyr	Arg	Met	Gln	Gln	Leu	
				275					280					285		
Ala	Leu	Gln	Ser	Ser	Gly	Gln	Ala	Leu	Arg	Ala	Ala	Gln	Asn	Ser	Arg	
				290					295					300		
Tyr	Pro	Thr	Val	Ser	Ala	His	Val	Gly	Tyr	Gln	Asn	Asn	Leu	Tyr	Thr	
				305					310					315		
Ser	Ser	Ala	Gln	Asn	Asn	Asp	Tyr	His	Tyr	Arg	Gly	Lys	Gly	Met	Ser	
				325					330					335		
Val	Gly	Val	Gln	Leu	Asn	Leu	Pro	Leu	Tyr	Thr	Gly	Gly	Glu	Leu	Ser	
				340					345					350		
Gly	Lys	Ile	His	Glu	Ala	Glu	Ala	Gln	Tyr	Gly	Ala	Ala	Glu	Ala	Gln	
				355					360					365		
Leu	Thr	Ala	Thr	Glu	Arg	His	Ile	Lys	Leu	Ala	Val	Arg	Gln	Ala	Tyr	
				370					375					380		

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 69
<211> 1400
<212> DNA
<213> Neisseria meningitidis

<400> 69
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ccgtttcact ttttaccttg ccactatccc tttcccacgc cgtttcggct tttacgctgc 180
ctgaagcatg gcgggcgggc cagcaacatt cggctgattt tcaagcgccc cattaccagc 240
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ggagcgtgca ggtgggacaa accttatttg actctgccaa atttgcacaa taccgccaaa 420
gcagggttcga tacgcaggct gcagaacagc gtttcgatgc ggcacgcgaa gaattgctgt 480
tgaaagttgc cgaaagttat ttcaacgttt tactcagccg agacaccggt gccgcccattg 540
cggcggaata agaggcttat gcccagcagg taaggcaggc gcaggcttta ttcaataaag 600
gtgctgccac cgcgctagat attcacgaag ccaaagccgg ttacgacaat gccctggccc 660
aagaaatcgc cgtattggct gagaaacaaa cctatgaaaa ccagttgaac gactacaccg 720
gcctggacag caaacaaatc gaggccatag ataccgccaa cctggtggca cgctatctgc 780
ccaagctgga acgttacagt ctggatgaat ggcagcgcac tgccttatcc aacaatcatg 840
aataccggat gcagcagctt gccctgcaaa gcagcggaca ggcgcttcgg gcagcacaga 900
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aaagcagccg tttgaaactg aaatcgaccg aaaccggcca acaatacggc atccgcaacc 1260
ggctggaagt aatacgggcg cggcaggaag tcgcccagc agaacagaaa ctgggtcaag 1320
cacggtataa attcatgctg gcttatttgc gcttggtgaa agagagcggg ttagggttgg 1380
aaacggtatt tgcggaataa 1400

<210> 70
<211> 450
<212> PRT
<213> Neisseria meningitidis

<400> 70

Met	Thr	Leu	Leu	Asn	Leu	Ile	Cys	Lys	Ile	Thr	Val	Phe	Pro	Phe	Ala	1	5	10	15
His	Arg	Pro	Ile	Cys	Asn	Met	Asn	Tyr	Phe	Arg	Leu	Asn	Pro	Ile	Phe	20	25	30	
Pro	Asn	Ile	Ser	Tyr	Pro	Phe	His	Phe	Leu	Pro	Cys	His	Tyr	Pro	Phe	35	40	45	
Pro	His	Pro	Phe	Arg	Leu	Leu	Arg	Cys	Leu	Lys	His	Gly	Gly	Arg	Arg	50	55	60	
Ser	Asn	Ile	Arg	Leu	Ile	Phe	Lys	Arg	Pro	Ile	Thr	Ser	Val	Met	Gln	65	70	75	80
Cys	Ala	His	Gly	Asn	Asn	Lys	Pro	Arg	Pro	His	Ser	Phe	Pro	Met	Tyr	85	90	95	
Pro	Pro	Met	Pro	Ala	Thr	Ser	Ala	Ser	Arg	His	Arg	Phe	Leu	Pro	Pro	100	105	110	
Ala	Lys	His	Arg	Asp	Gly	Ala	Cys	Arg	Trp	Asp	Lys	Pro	Tyr	Leu	Thr	115	120	125	
Leu	Pro	Asn	Leu	His	Asn	Thr	Ala	Lys	Ala	Gly	Ser	Ile	Arg	Arg	Leu	130	135	140	
Gln	Asn	Ser	Val	Ser	Met	Arg	His	Ala	Lys	Asn	Cys	Cys	Lys	Leu	Pro	145	150	155	160
Lys	Val	Ile	Ser	Thr	Phe	Tyr	Ser	Ala	Glu	Thr	Pro	Leu	Pro	Pro	Met	165	170	175	
Arg	Arg	Lys	Lys	Arg	Leu	Met	Pro	Ser	Arg	Gly	Arg	Arg	Arg	Leu	Tyr	180	185	190	
Ser	Ile	Lys	Val	Leu	Pro	Pro	Arg	Ile	Phe	Thr	Lys	Pro	Lys	Pro	Val	195	200	205	
Thr	Thr	Met	Pro	Trp	Pro	Lys	Lys	Ser	Pro	Tyr	Trp	Leu	Arg	Asn	Lys	210	215	220	
Pro	Met	Lys	Thr	Ser	Thr	Thr	Thr	Pro	Ala	Trp	Thr	Ala	Asn	Lys	Ser	225	230	235	240
Arg	Pro	Ile	Pro	Pro	Thr	Cys	Trp	His	Ala	Ile	Cys	Pro	Ser	Trp	Asn	245	250	255	
Val	Thr	Val	Trp	Met	Asn	Gly	Ser	Ala	Leu	Pro	Tyr	Pro	Thr	Ile	Met	260	265	270	
Asn	Thr	Gly	Cys	Ser	Ser	Leu	Pro	Cys	Lys	Ala	Ala	Asp	Arg	Arg	Phe	275	280	285	
Gly	Gln	His	Arg	Thr	Ala	Ala	Ile	Pro	Pro	Phe	Leu	Pro	Met	Ser	Ala	290	295	300	

Ile Arg Ile Thr Ser Thr Leu His Leu Arg Arg Ile Met Thr Thr Thr
305 310 315 320

Ile Gly Ala Lys Gly Ala Ser Ala Tyr Ser Ile Cys Arg Phe Ile Pro
325 330 335

Ala Glu Asn Cys Arg Ala Lys Ser Met Lys Pro Lys Arg Asn Thr Gly
340 345 350

Leu Pro Lys His Ser Pro Gln Pro Ser Gly Thr Ser Asn Ser Pro Tyr
355 360 365

Ala Arg Leu Ile Pro Lys Ala Val Arg Arg Val Thr Lys Ser Trp Arg
370 375 380

Lys Asn Gly Phe Trp Lys Ala Ala Val Asn Asn Arg Pro Lys Pro Ala
385 390 395 400

Asn Asn Thr Ala Ser Ala Thr Gly Trp Lys Tyr Gly Arg Gly Arg Lys
405 410 415

Ser Pro Lys Gln Asn Arg Asn Trp Leu Lys His Gly Ile Asn Ser Cys
420 425 430

Trp Leu Ile Cys Ala Trp Lys Arg Ala Gly Gly Trp Lys Arg Tyr Leu
435 440 445

Arg Asn
450

<210> 71

<211> 1404

<212> DNA

<213> Neisseria meningitidis

<400> 71

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ctaccggttt cactttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgagcaa cattcggtg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
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caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcccggg aaaaagaggc ttatgccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaacaa aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
cgccaggcct ataccgaaag cggcgcggcg cgttaccaa tcatggcgca agaaccgggtt 1200

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ttggaaagca gccgtttgaa actgaaatcg accgaaacgg gccacaata cggcatccgc 1260
 aaccggctgg aagtaatacg ggcgcggcag gaagtcgcc aagcagaaca gaaactggct 1320
 caagcacggg ataaattcat gctggcttat ttgcgcttgg tgaaagagag cggggttaggg 1380
 ttggaaacgg tatttgcgga ataa 1404

<210> 72

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 72

Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
 1 5 10 15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
 85 90 95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
 100 105 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
 115 120 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
 130 135 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
 145 150 155 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
 165 170 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
 180 185 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
 195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
 210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
 225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu

245	250	255
Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp		
260	265	270
Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu		
275	280	285
Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg		
290	295	300
Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr		
305	310	315
Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser		
325	330	335
Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser		
340	345	350
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln		
355	360	365
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr		
370	375	380
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val		
385	390	395
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln		
405	410	415
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val		
420	425	430
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu		
435	440	445
Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val		
450	455	460
Phe Ala Glu		
465		

<210> 73
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<400> 73
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 acgccctatt tgcaacatga actatttttcg gctatgaaat cctatttttc caaatatatac 120
 ctaccggttt cacttttttac cttgccacta tccctttccc catccgtttc ggctttttacg 180
 ctgcctgaag catggcgggc ggcgacgcaa cattcggtcg attttcaagc gtccattac 240
 cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
 tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccaccgc cgaaacacag 360

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ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tgcatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gccaagaaa tgcgcgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
cagaacagcc gctatcccac cgtttctgccc catgtcggct atcagaataa cctctacact 960
tcattctgcg agaataatga ctaccactat cggggcaaaag ggatgagcgt cggcgtacag 1020
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caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
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<210> 74

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 74

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1                      5                      10                   15

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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
      20                      25                   30

```

```

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
      35                      40                   45

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```

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
      50                      55                   60

```

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Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
      65                      70                   75                   80

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Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
      85                      90                   95

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Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
      100                     105                   110

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```

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
      115                     120                   125

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```

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
      130                     135                   140

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```

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
      145                     150                   155                   160

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Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
      165                     170                   175

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Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
180 185 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 75
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<400> 75
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 ctacccgttt cactttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
 ctgcctgaag catggcgggc ggcgagcaa cattcggtcg attttcaagc gtcccattac 240
 cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
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 ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
 caaagcaggt tcgatacgca ggctgcagaa cagcgttttc atgcggcacg cgaagaattg 480
 ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
 catgcggcgg aaaaagaggg ttatgccagc caggtaaggc aggcgcaggc tttattcaat 600
 aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
 gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
 accgacctgg atagcaacaa aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
 ctgcccgaagc tggaaacgta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
 catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
 cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
 tcattctgcgc agaataatga ctaccactat cggggcaaag ggatgagcgt cggcgtacag 1020
 ttgaatttgc cgcttttatac cggcggagaa ttgtcgggca aaatccatga agccgaagcg 1080
 caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
 cgccaggctt ataccgaaag cggcgcggcg cgttaccaaa tcatggcgca agaacgggtt 1200
 ttgaaagca gccgtttgaa actgaaatcg accgaaaccg gccacaataa cggcatccgc 1260
 aaccggctgg aagtaatacg ggcgcgagc gaagtgcgcc aagcagaaca gaaactggct 1320
 caagcacggt ataaattcat gctggcttat ttgcgcttg tgaaagagag cgggttaggg 1380
 ttggaacggt tatttgcgga ataa 1404

<210> 76
 <211> 467
 <212> PRT
 <213> Neisseria meningitidis

<400> 76
 Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
 1 5 10 15
 Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30
 Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45
 Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60
 Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80
 Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
 85 90 95

Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser		
			100						105				110				
Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln		
		115					120					125					
Thr	Leu	Phe	Asp	Ala	Ala	Lys	Phe	Ala	Gln	Tyr	Arg	Gln	Ser	Arg	Phe		
	130					135					140						
Asp	Thr	Gln	Ala	Ala	Glu	Gln	Arg	Phe	Asp	Ala	Ala	Arg	Glu	Glu	Leu		
145					150					155					160		
Leu	Leu	Lys	Val	Ala	Glu	Ser	Tyr	Phe	Asn	Val	Leu	Leu	Ser	Arg	Asp		
			165						170					175			
Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val		
		180						185					190				
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp		
		195					200					205					
Ile	His	Glu	Ala	Lys	Ala	Gly	Tyr	Asp	Asn	Ala	Leu	Ala	Gln	Glu	Ile		
	210					215					220						
Ala	Val	Leu	Ala	Glu	Lys	Gln	Thr	Tyr	Glu	Asn	Gln	Leu	Asn	Asp	Tyr		
225					230					235					240		
Thr	Asp	Leu	Asp	Ser	Lys	Gln	Ile	Glu	Ala	Ile	Asp	Thr	Ala	Asn	Leu		
			245						250					255			
Leu	Ala	Arg	Tyr	Leu	Pro	Lys	Leu	Glu	Arg	Tyr	Ser	Leu	Asp	Glu	Trp		
		260						265					270				
Gln	Arg	Ile	Ala	Leu	Ser	Asn	Asn	His	Glu	Tyr	Arg	Met	Gln	Gln	Leu		
		275					280					285					
Ala	Leu	Gln	Ser	Ser	Gly	Gln	Ala	Leu	Arg	Ala	Ala	Gln	Asn	Ser	Arg		
	290					295						300					
Tyr	Pro	Thr	Val	Ser	Ala	His	Val	Gly	Tyr	Gln	Asn	Asn	Leu	Tyr	Thr		
305					310					315					320		
Ser	Ser	Ala	Gln	Asn	Asn	Asp	Tyr	His	Tyr	Arg	Gly	Lys	Gly	Met	Ser		
				325					330					335			
Val	Gly	Val	Gln	Leu	Asn	Leu	Pro	Leu	Tyr	Thr	Gly	Gly	Glu	Leu	Ser		
		340						345					350				
Gly	Lys	Ile	His	Glu	Ala	Glu	Ala	Gln	Tyr	Gly	Ala	Ala	Glu	Ala	Gln		
		355					360					365					
Leu	Thr	Ala	Thr	Glu	Arg	His	Ile	Lys	Leu	Ala	Val	Arg	Gln	Ala	Tyr		
	370					375					380						
Thr	Glu	Ser	Gly	Ala	Ala	Arg	Tyr	Gln	Ile	Met	Ala	Gln	Glu	Arg	Val		
385					390					395					400		

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 77
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 77
atgacattgc tcaatctaata gataatgcaa gattacggta tttccgtttg cctgacactg 60
acgccctatt tgcaacatga actatttttcg gctatgaaat cctatttttc caaatatatc 120
ctaccggttt cacttttttac cttgccacta tccctttccc catccgtttc ggctttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccaccgc cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgttttc atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaac aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaaacgta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
cagaacagcc gctatcccac cgtttctgce catgtcggct atcagaataa cctctacact 960
tcatctgcgc agaataatga ctaccactat cggggcaaaag ggatgagcgt cggcgtagac 1020
ttgaatttgc cgcttttatac cggcggagaa ttgtcgggca aaatccatga agccgaagcg 1080
caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgcctga 1140
cgccaggcct ataccgaaag cggcgcggcg cgttaccaaa tcatggcgca agaacggggt 1200
ttggaaagca gccgtttgaa actgaaatcg accgaaaccg gccaacaata cggcatccgc 1260
aaccggctgg aagtaatacg ggcgcggcag gaagtcgcc aagcagaaca gaaactggct 1320
caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

<210> 78
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 78
Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
1 5 10 15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met

20					25					30					
Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu
	35						40					45			
Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala
	50					55					60				
Trp	Arg	Ala	Ala	Gln	Gln	His	Ser	Ala	Asp	Phe	Gln	Ala	Ser	His	Tyr
	65					70					75				80
Gln	Arg	Asp	Ala	Val	Arg	Ala	Arg	Gln	Gln	Gln	Ala	Lys	Ala	Ala	Phe
				85					90					95	
Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser
			100					105					110		
Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln
			115					120					125		
Thr	Leu	Phe	Asp	Ala	Ala	Lys	Phe	Ala	Gln	Tyr	Arg	Gln	Ser	Arg	Phe
	130					135					140				
Asp	Thr	Gln	Ala	Ala	Glu	Gln	Arg	Phe	Asp	Ala	Ala	Arg	Glu	Glu	Leu
	145					150					155				160
Leu	Leu	Lys	Val	Ala	Glu	Ser	Tyr	Phe	Asn	Val	Leu	Leu	Ser	Arg	Asp
				165					170					175	
Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val
			180					185					190		
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp
			195				200					205			
Ile	His	Glu	Ala	Lys	Ala	Gly	Tyr	Asp	Asn	Ala	Leu	Ala	Gln	Glu	Ile
	210					215					220				
Ala	Val	Leu	Ala	Glu	Lys	Gln	Thr	Tyr	Glu	Asn	Gln	Leu	Asn	Asp	Tyr
	225					230					235				240
Thr	Asp	Leu	Asp	Ser	Lys	Gln	Ile	Glu	Ala	Ile	Asp	Thr	Ala	Asn	Leu
				245					250					255	
Leu	Ala	Arg	Tyr	Leu	Pro	Lys	Leu	Glu	Arg	Tyr	Ser	Leu	Asp	Glu	Trp
			260					265					270		
Gln	Arg	Ile	Ala	Leu	Ser	Asn	Asn	His	Glu	Tyr	Arg	Met	Gln	Gln	Leu
		275					280					285			
Ala	Leu	Gln	Ser	Ser	Gly	Gln	Ala	Leu	Arg	Ala	Ala	Gln	Asn	Ser	Arg
	290					295					300				
Tyr	Pro	Thr	Val	Ser	Ala	His	Val	Gly	Tyr	Gln	Asn	Asn	Leu	Tyr	Thr
	305					310					315				320
Ser	Ser	Ala	Gln	Asn	Asn	Asp	Tyr	His	Tyr	Arg	Gly	Lys	Gly	Met	Ser

	325		330		335
Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser	340		345		350
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln	355		360		365
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr	370		375		380
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val	385		390		395
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln	405		410		415
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val	420		425		430
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu	435		440		445
Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val	450		455		460
Phe Ala Glu	465				

<210> 79
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<400> 79
 atgacattgc tcaatctaata gataatgcaa gattacggta tttccggttg cctgacactg 60
 acgccctatt tgcaacatga actatttttcg gctatgaaat cctatttttc caaatatatac 120
 ctaccggttt cacttttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
 ctgcctgaag catggcgggc ggcgagcaa cattcggtg attttcaagc gtcccattac 240
 cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
 tccgccaatg ccagctacca gcgccagccg ccacgtattt cttccaccgc cgaaacacag 360
 ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
 caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
 ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
 catgcggcgg aaaaagaggc ttatgccag caggtaaggc aggcgcaggc tttattcaat 600
 aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgcctg 660
 gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
 accgacctgg atagcaacaa aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
 ctgccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
 catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
 cagaacagcc gctatcccac cgtttctgcc catgtoggct atcagaataa cctctacact 960
 tcatctgcgc agaataatga ctaccactat cggggcaaag ggatgagcgt cggcgtagag 1020
 ttgaatttgc cgcttttatac cggcgagaaa ttgtcgggca aaatccatga agccgaagcg 1080
 caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
 cgccaggcct ataccgaaag cggcgcgcg cgttaccaa tcatggcgca agaacgggtt 1200
 ttggaaagca gccgtttgaa actgaaatcg accgaaaccg gccacaataa cggcatccgc 1260

aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320
 caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
 ttggaacgg tatttgcgga ataa 1404

<210> 80

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 80

Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
 1 5 10 15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
 85 90 95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
 100 105 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
 115 120 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
 130 135 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
 145 150 155 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
 165 170 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
 180 185 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
 195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
 210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
 225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
 245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
 260 265 270
 Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
 275 280 285
 Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
 290 295 300
 Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
 305 310 315 320
 Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
 325 330 335
 Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
 340 345 350
 Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
 355 360 365
 Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
 370 375 380
 Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
 385 390 395 400
 Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
 405 410 415
 Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
 420 425 430
 Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
 435 440 445
 Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
 450 455 460
 Phe Ala Glu
 465

<210> 81
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<400> 81
 atgacattgc tcaatctaata gataatgcaa gattacggta tttccgtttg cctgacactg 60
 acgccctatt tgcaacatga actatttttcg gctatgaaat cctattttttc caaatatatc 120
 ctaccggttt cacttttttac cttgccacta tccctttccc catccgtttc ggctttttacg 180
 ctgcctgaag catggcgggc ggcgagcaa cattcggtg attttcaagc gtccattac 240
 cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
 tccgccaatg ccagctacca gcgcccagccg ccatcgattt cttccaccgc cgaaacacag 360


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ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tgcatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgccagc caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
cagaacagcc gctatccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
tcattctgcg agaataatga ctaccactat cggggcaaag ggatgagcgt cggcgctacag 1020
ttgaatttgc cgctttatac cggcggagaa ttgtcgggca aaatccatga agccgaagcg 1080
caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggacacatcaa actcgccgta 1140
cgccaagctt ataccgaaag cggcgcgcg cgttaccaa tcatggcgca agaacggggt 1200
ttggaaagca gccgtttgaa actgaaatcg accgaaaccg gccacaata cggcatccgc 1260
aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320
caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

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<210> 82

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 82

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1              5              10              15

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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
      20              25              30

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```

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
      35              40              45

```

```

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
      50              55              60

```

```

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
      65              70              75              80

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Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
      85              90              95

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Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
      100             105             110

```

```

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
      115             120             125

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```

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
      130             135             140

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```

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
      145             150             155             160

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Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
      165             170             175

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Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
 180 185 190
 Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
 195 200 205
 Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
 210 215 220
 Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
 225 230 235 240
 Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
 245 250 255
 Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
 260 265 270
 Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
 275 280 285
 Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
 290 295 300
 Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
 305 310 315 320
 Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
 325 330 335
 Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
 340 345 350
 Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
 355 360 365
 Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
 370 375 380
 Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
 385 390 395 400
 Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
 405 410 415
 Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
 420 425 430
 Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
 435 440 445
 Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
 450 455 460
 Phe Ala Glu
 465

<210> 83
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<400> 83
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 acgccctatt tgcaacatga actatatttcg gctatgaaat cctatattttc caaatatatc 120
 ctacccgttt cactttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
 ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
 cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
 tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccaccgg cgaaacacag 360
 ggatggagcg tgcaggtggg acaaacctta tttgacgtg ccaaatttgc acaataccgc 420
 caaagcaggt tcgatacgca ggctgcagaa cagcgttttc atgcggcacg cgaagaattg 480
 ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
 catgcggcgg aaaaagaggg ttatgccagc caggtaaggc aggcgcaggc tttattcaat 600
 aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccttg 660
 gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
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 ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
 catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
 cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
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 caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgcctga 1140
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 ttggaagaca gccgtttgaa actgaaatcg accgaaaccg gccacaata cggcatccgc 1260
 aaccggctgg aagtaatacg ggcgcggcag gaagtgcgcc aagcagaaca gaaactggct 1320
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 ttggaacagg tatttgcgga ataa 1404

<210> 84
 <211> 467
 <212> PRT
 <213> Neisseria meningitidis

<400> 84
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 Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30
 Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45
 Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60
 Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80
 Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
 85 90 95

Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser		
			100					105					110				
Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln		
		115					120					125					
Thr	Leu	Phe	Asp	Ala	Ala	Lys	Phe	Ala	Gln	Tyr	Arg	Gln	Ser	Arg	Phe		
	130					135					140						
Asp	Thr	Gln	Ala	Ala	Glu	Gln	Arg	Phe	Asp	Ala	Ala	Arg	Glu	Glu	Leu		
145					150					155					160		
Leu	Leu	Lys	Val	Ala	Glu	Ser	Tyr	Phe	Asn	Val	Leu	Leu	Ser	Arg	Asp		
			165						170					175			
Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val		
		180						185					190				
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp		
		195					200					205					
Ile	His	Glu	Ala	Lys	Ala	Gly	Tyr	Asp	Asn	Ala	Leu	Ala	Gln	Glu	Ile		
	210					215					220						
Ala	Val	Leu	Ala	Glu	Lys	Gln	Thr	Tyr	Glu	Asn	Gln	Leu	Asn	Asp	Tyr		
225					230					235					240		
Thr	Asp	Leu	Asp	Ser	Lys	Gln	Ile	Glu	Ala	Ile	Asp	Thr	Ala	Asn	Leu		
				245					250					255			
Leu	Ala	Arg	Tyr	Leu	Pro	Lys	Leu	Glu	Arg	Tyr	Ser	Leu	Asp	Glu	Trp		
			260					265					270				
Gln	Arg	Ile	Ala	Leu	Ser	Asn	Asn	His	Glu	Tyr	Arg	Met	Gln	Gln	Leu		
		275				280						285					
Ala	Leu	Gln	Ser	Ser	Gly	Gln	Ala	Leu	Arg	Ala	Ala	Gln	Asn	Ser	Arg		
	290					295						300					
Tyr	Pro	Thr	Val	Ser	Ala	His	Val	Gly	Tyr	Gln	Asn	Asn	Leu	Tyr	Thr		
305					310					315					320		
Ser	Ser	Ala	Gln	Asn	Asn	Asp	Tyr	His	Tyr	Arg	Gly	Lys	Gly	Met	Ser		
				325					330					335			
Val	Gly	Val	Gln	Leu	Asn	Leu	Pro	Leu	Tyr	Thr	Gly	Gly	Glu	Leu	Ser		
			340					345					350				
Gly	Lys	Ile	His	Glu	Ala	Glu	Ala	Gln	Tyr	Gly	Ala	Ala	Glu	Ala	Gln		
		355					360					365					
Leu	Thr	Ala	Thr	Glu	Arg	His	Ile	Lys	Leu	Ala	Val	Arg	Gln	Ala	Tyr		
	370					375						380					
Thr	Glu	Ser	Gly	Ala	Ala	Arg	Tyr	Gln	Ile	Met	Ala	Gln	Glu	Arg	Val		
385					390					395					400		

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 85

<211> 1404

<212> DNA

<213> Neisseria meningitidis

<400> 85

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ctacccgttt cactttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tcccattgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccaccgc cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggg ttatgccagc caggtaaggc aggcgcaggg tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaac aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaaacgta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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cagaacagcc gctatcccac cgtttctgccc catgtcggct atcagaataa cctctacact 960
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cgccaggcct ataccgaaag cggcgcggcg cgttaccaa tcatggcgca agaacggggt 1200
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aaccggctgg aagtaatacg ggccggcgag gaagtcgccc aagcagaaca gaaactggct 1320
caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404
```

<210> 86

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 86

Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met

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Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu	
35					40					45						
Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala	
50					55					60						
Trp	Arg	Ala	Ala	Gln	Gln	His	Ser	Ala	Asp	Phe	Gln	Ala	Ser	His	Tyr	
65					70					75					80	
Gln	Arg	Asp	Ala	Val	Arg	Ala	Arg	Gln	Gln	Gln	Ala	Lys	Ala	Ala	Phe	
85					90					95						
Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser	
100					105					110						
Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln	
115					120					125						
Thr	Leu	Phe	Asp	Ala	Ala	Lys	Phe	Ala	Gln	Tyr	Arg	Gln	Ser	Arg	Phe	
130					135					140						
Asp	Thr	Gln	Ala	Ala	Glu	Gln	Arg	Phe	Asp	Ala	Ala	Arg	Glu	Glu	Leu	
145					150					155					160	
Leu	Leu	Lys	Val	Ala	Glu	Ser	Tyr	Phe	Asn	Val	Leu	Leu	Ser	Arg	Asp	
165					170					175						
Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val	
180					185					190						
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp	
195					200					205						
Ile	His	Glu	Ala	Lys	Ala	Gly	Tyr	Asp	Asn	Ala	Leu	Ala	Gln	Glu	Ile	
210					215					220						
Ala	Val	Leu	Ala	Glu	Lys	Gln	Thr	Tyr	Glu	Asn	Gln	Leu	Asn	Asp	Tyr	
225					230					235					240	
Thr	Asp	Leu	Asp	Ser	Lys	Gln	Ile	Glu	Ala	Ile	Asp	Thr	Ala	Asn	Leu	
245					250					255						
Leu	Ala	Arg	Tyr	Leu	Pro	Lys	Leu	Glu	Arg	Tyr	Ser	Leu	Asp	Glu	Trp	
260					265					270						
Gln	Arg	Ile	Ala	Leu	Ser	Asn	Asn	His	Glu	Tyr	Arg	Met	Gln	Gln	Leu	
275					280					285						
Ala	Leu	Gln	Ser	Ser	Gly	Gln	Ala	Leu	Arg	Ala	Ala	Gln	Asn	Ser	Arg	
290					295					300						
Tyr	Pro	Thr	Val	Ser	Ala	His	Val	Gly	Tyr	Gln	Asn	Asn	Leu	Tyr	Thr	
305					310					315					320	
Ser	Ser	Ala	Gln	Asn	Asn	Asp	Tyr	His	Tyr	Arg	Gly	Lys	Gly	Met	Ser	

325	330	335
Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser		
340	345	350
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln		
355	360	365
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr		
370	375	380
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val		
385	390	395
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln		
405	410	415
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val		
420	425	430
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu		
435	440	445
Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val		
450	455	460
Phe Ala Glu		
465		

<210> 87
 <211> 1404
 <212> DNA
 <213> Neisseria meningitidis

<400> 87
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 ctaccCGttt cactTTTTtac cttgccacta tccctttccc catccgTTTTc ggctTTTTacg 180
 ctgcctgaag catggcgggc ggcgagcaa cattcggtcg attttcaagc gtcccatcac 240
 cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
 tccgccaatg ccagctacca gcgccagccg ccacgatttt cttccaccCG cgaaacacag 360
 ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
 caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
 ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
 catgcggcgg aaaaagaggc ttatgccag caggtaaggc aggcgcaggc tttattcaat 600
 aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgcctg 660
 gcccaagaaa tcgcgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
 accgacctgg atagcaacaa aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
 ctgccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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 cagaacagcc gctatccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
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 caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
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 ttggaacgg tatttgcgga ataa 1404

<210> 88

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 88

Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
 20 25 30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
 35 40 45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
 50 55 60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65 70 75 80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
 85 90 95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
 100 105 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
 115 120 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
 130 135 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
 145 150 155 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
 165 170 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
 180 185 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
 195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
 210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
 225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
 245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 89

<211> 1404

<212> DNA

<213> Neisseria meningitidis

<400> 89

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ctaccggttt cactttttac cttgccacta tccctttccc catccgtttc ggctttttacg 180
ctgcctgaag catggcgggc ggcgagcaa cattoggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccaccgc cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420

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caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
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aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
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caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
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<210> 90

<211> 467

<212> PRT

<213> Neisseria meningitidis

<400> 90

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
      20              25             30

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```

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
      35              40             45

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```

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
      50              55             60

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```

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
      65              70             75             80

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```

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
      85              90             95

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```

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
      100             105            110

```

```

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
      115             120            125

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Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
      130             135            140

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Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
      145             150            155            160

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Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
      165             170            175

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Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val	180	185	190	
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp	195	200	205	
Ile	His	Glu	Ala	Lys	Ala	Gly	Tyr	Asp	Asn	Ala	Leu	Ala	Gln	Glu	Ile	210	215	220	
Ala	Val	Leu	Ala	Glu	Lys	Gln	Thr	Tyr	Glu	Asn	Gln	Leu	Asn	Asp	Tyr	225	230	235	240
Thr	Asp	Leu	Asp	Ser	Lys	Gln	Ile	Glu	Ala	Ile	Asp	Thr	Ala	Asn	Leu	245	250	255	
Leu	Ala	Arg	Tyr	Leu	Pro	Lys	Leu	Glu	Arg	Tyr	Ser	Leu	Asp	Glu	Trp	260	265	270	
Gln	Arg	Ile	Ala	Leu	Ser	Asn	Asn	His	Glu	Tyr	Arg	Met	Gln	Gln	Leu	275	280	285	
Ala	Leu	Gln	Ser	Ser	Gly	Gln	Ala	Leu	Arg	Ala	Ala	Gln	Asn	Ser	Arg	290	295	300	
Tyr	Pro	Thr	Val	Ser	Ala	His	Val	Gly	Tyr	Gln	Asn	Asn	Leu	Tyr	Thr	305	310	315	320
Ser	Ser	Ala	Gln	Asn	Asn	Asp	Tyr	His	Tyr	Arg	Gly	Lys	Gly	Met	Ser	325	330	335	
Val	Gly	Val	Gln	Leu	Asn	Leu	Pro	Leu	Tyr	Thr	Gly	Gly	Glu	Leu	Ser	340	345	350	
Gly	Lys	Ile	His	Glu	Ala	Glu	Ala	Gln	Tyr	Gly	Ala	Ala	Glu	Ala	Gln	355	360	365	
Leu	Thr	Ala	Thr	Glu	Arg	His	Ile	Lys	Leu	Ala	Val	Arg	Gln	Ala	Tyr	370	375	380	
Thr	Glu	Ser	Gly	Ala	Ala	Arg	Tyr	Gln	Ile	Met	Ala	Gln	Glu	Arg	Val	385	390	395	400
Leu	Glu	Ser	Ser	Arg	Leu	Lys	Leu	Lys	Ser	Thr	Glu	Thr	Gly	Gln	Gln	405	410	415	
Tyr	Gly	Ile	Arg	Asn	Arg	Leu	Glu	Val	Ile	Arg	Ala	Arg	Gln	Glu	Val	420	425	430	
Ala	Gln	Ala	Glu	Gln	Lys	Leu	Ala	Gln	Ala	Arg	Tyr	Lys	Phe	Met	Leu	435	440	445	
Ala	Tyr	Leu	Arg	Leu	Val	Lys	Glu	Ser	Gly	Leu	Gly	Leu	Glu	Thr	Val	450	455	460	
Phe	Ala	Glu														465			

<210> 91
 <211> 29
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:primer

 <400> 91
 gaacatggat cccgtccaca cactttacg 29

 <210> 92
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence:primer

 <400> 92
 gcggccgaat tccaacaggg tcaatgaagt 30

 <210> 93
 <211> 34
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <210> 94
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 <400> 94
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 <210> 95
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<210> 114

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<210> 115

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<400> 115

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33

